CHAPTER 1

CH-53 PILOT
(INTERIM APPROVED 3 Aug 04)

FIGURES

*** * N O T E * ***

Aircrews shall include Crew Resource Management as part of their brief.

CHAPTER 1

CH-53 PILOT

100. MARINE HEAVY HELICOPTER SQUADRON (CH-53E) UNIT CORE COMPETENCY NOTE

The capabilities defined and described in the core capability and unit template sections are provided to ensure each like squadron maintains a common base of training and depth of capabilities. When resources permit, and when in the judgment of the commander additional training would significantly increase the unit's war fighting capability, training to a level above these base capabilities is permitted. It is incumbent upon, and expected of, the commander to balance any increase in the depth of core capabilities against the long-term health and readiness of his unit while staying within his resource constraints.

1. HMH Mission. Support the MAGTF Commander by providing assault support transport of heavy weapons, equipment and supplies, day or night under all weather conditions during expeditionary, joint or combined operations.

2. Mission Essential Task List (METL)

a. (UJTL TA 1.1.2) Conduct Shipboard Deck Helicopter Landing Qualifications

b. (UJTL TA 1.1.4) Conduct Sea and Air Deployment Operations
- Maintain the capability to deploy and operate from advanced bases, expeditionary airfields, Forward Operating Bases (FOBs), and naval shipping.
- Maintain the capability to conduct extended range operations employing aerial refueling.
- Perform organizational maintenance on assigned aircraft.

c. (UJTL TA 1.2.1) Conduct Air Assault Operations and Air Assault
- Provided assault support transport of heavy weapons, equipment, supplies, and combat troops using internal and/or external means.
- Provide support for casualty evacuation operations.
- Maintain self-defense capability from ground-to-air and air-to-air threats.

d. (UJTL TA 1.2.3) Conduct Amphibious Assault and Raid Operations
- Conduct assault support for maritime special operations.

e. (UJTL TA 4.2) Distribute Supplies and Provide Transport Service
- Conduct Aerial Re-supply.
- Provide support for mobile Forward Arming and Refueling Points (FARPS).

f. (UJTL TA 4.4) Conduct Joint Logistics Over-The-Shore Operations (JLOTS)

g. (UJTL TA 6.2) Conduct Joint Personnel Recovery
- Conduct Tactical Recovery of Aircraft and Personnel (TRAP) operations.
- Augment local Search and Rescue (SAR) assets.

h. (UJTL TA 6.4) Conduct Noncombatant Evacuation
- Provide support for evacuation operations.

3. Table of Organization. Refer to Table of Organization 8960 managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for CH-53E units. As of this publication date, CH-53E units are authorized:

SQUADRON
16 Aircraft
38 Pilots
26 Crew Chiefs
26 Aerial Observers/Aerial Gunners

RESERVE SQUADRON
8 Aircraft
18 Pilots
13 Crew Chiefs
13 Aerial Observers/Aerial Gunners

DETACHMENT
4 Aircraft
8 Pilots
6 Crew Chiefs
6 Aerial Observers/Aerial Gunners

4. Core Capability. A core capable CH-53 unit is able to sustain the number of sorties listed below on a daily basis during contingency/combat operations. The sortie rates are based on 1.8 hour average sortie duration and assumes $\geq$ 70 percent FMC aircraft and $\geq$ 90 percent T/O aircrew on hand. If unit FMC aircraft < 70 percent or T/O aircrew < 90 percent, core capability will be degraded by a like percentage. A core capable unit is able to accomplish all tasks designated in the unit METL from a main base, expeditionary base, or amphibious platform.

a. Core Capable Squadron. A core capable CH-53E squadron is able to sustain 27 sorties.

b. Core Capable Reserve Squadron. A core capable Reserve Squadron is able to sustain 14 sorties.

c. Core Capable Squadron (-). A core capable squadron (-) is able to sustain 21 sorties.

d. Core Capable Detachment. A core capable detachment is able to sustain 7 sorties.

5. METL/Core Skill Matrix. CH-53E core skills directly support the METL as follows:

	CH-53E CORE SKILL										CORE PLUS
METL	FORM	CAL	TERF	EXT	DM	AR	TAC	AG	HLL	LLL	CQ
a. Conduct Shipboard Deck Landing Qualifications	X	X							X	X	X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X	X	X	X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X	X	X	X	X
f. Conduct Joint Logistics Over-The-Shore Operations (JLOTS)	X	X	X	X	X	X	X	X	X	X	X
g. Conduct Joint Personnel Recovery	X	X	X		X	X	X	X	X	X	X
h. Conduct Noncombatant Evacuation	X	X	X		X	X	X	X	X	X	X

6. CH-53E Core Model Minimum Requirements (CMMR). Squadron core competency reflects the minimum level of competency a squadron must achieve to perform its core capability. Squadron core competency is measured in terms of minimum unit Core Skill Proficiency (CSP) and minimum numbers of flight leaders per paragraphs a. and b. below:

a. Minimum Unit CSP Requirements. As a minimum, in order to be considered core competent, a unit must possess the following numbers of crews who are proficient in each core skill (unit CSP). In order to be considered proficient in a core skill (individual CSP), a crewmember must attain and maintain proficiency in core skill events, as delineated in paragraphs (1) and (2) below. The standard CH-53E crew consists of 2 Pilots, a Crew Chief, and an AO/AG. Crew Chief surpluses may be used to satisfy AO requirements.
* NOTE: CQ is a core plus skill. Proficiency in CQ is not required to obtain unit CSP. Below are CH-53E community recommended unit/individual CSP standards for CQ.

CH-53E Unit CSP Requirements Squadron				
CORE SKILL *CORE PLUS	Pilots	Crew Chiefs	AO/AGs	Crews
FORM	24	12	12	12
CAL	24	12	12	12
TERF	24	12	12	12
EXT	24	12	12	12
DM	16	8	8	8
AR	12	-	-	6
TAC	16	8	8	8
AG	16	8	8	8
HLL	24	12	12	12
LLL	16	8	8	8
*CQ	18	9	9	9

CH-53E Unit CSP Requirements Squadron (-) (less 4 plane detachment)				
CORE SKILL *CORE PLUS	Pilots	Crew Chiefs	AO/AGs	Crews
FORM	16	8	8	8
CAL	16	8	8	8
TERF	16	8	8	8
EXT	16	8	8	8
DM	8	4	4	4
AR	8	-	-	4
TAC	8	4	4	4
AG	8	4	4	4
HLL	16	8	8	8
LLL	12	6	6	6
*CQ	10	5	5	5

CH-53E Unit CSP Requirements Reserve Squadron				
CORE SKILL *CORE PLUS	Pilots	Crew Chiefs	AO/AGs	Crews
FORM	12	6	6	6
CAL	12	6	6	6
TERF	12	6	6	6
EXT	12	6	6	6
DM	12	6	6	6
AR	6	-	-	3
TAC	6	3	3	3
AG	6	3	3	3
HLL	12	6	6	6
LLL	6	3	3	3
*CQ	12	6	6	6

CH-53E Unit CSP Requirements 4 Plane Detachment				
CORE SKILL *CORE PLUS	Pilots	Crew Chiefs	AO/AGs	Crews
FORM	8	4	4	4
CAL	8	4	4	4
TERF	8	4	4	4
EXT	8	4	4	4
DM	8	4	4	4
AR	4	-	-	2
TAC	4	4	4	2
AG	4	4	4	2
HLL	8	4	4	4
LLL	4	2	2	2
*CQ	8	4	4	4

(1) Events Required to Attain Individual CSP. To initially attain CSP, a crewmember must successfully complete all of the T&R events listed in the chart below for that core skill.

CH-53E Pilot	FORM	CAL	TERF	EXT	DM	AR	TAC	AG	HLL	LLL	CQ
T&R event requirements to attain competency	210 211	220 221 222 223	230 231 232 233	240 241 242 243 340 341 343	250 350	260 360 361 362	290 291 390 391	280 380	211 222 223 232 233 291	320 321 330 331 342 391	270 471 472 473 474 475 476

CH-53E Crew Chief	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL	CQ
T&R event requirements to attain competency	200 201	210 211	220 221 222 223	230 231 232 233	240 241 242 243 341 343	350	290 291 390 391	280 281 380 381	211 222 223 232 233 291	320 321 330 331 342	471 472 473 474 475 476

CH-53E AO/AG	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL	CQ
T&R event requirements to attain competency	200 201	210 211	220 221 222 223	230 231 232 233	240 241 242 243 341 343	350	290 291 390 391	280 281 380 381	211 222 223 232 233 291	320 321 330 331 342	471 472 473 474 475 476

(2) Events Required to Maintain Individual CSP. To maintain CSP, a crewmember must maintain proficiency in all of the T&R events listed in the chart below for that core skill.

CH-53E Pilot	FORM	CAL	TERF	EXT	DM	AR	TAC	AG	HLL	LLL	CQ
T&R event requirements to maintain competency	210 211	221 223	231 233	241 243 340 341 343	350	361 362	390 391	280 380	223 291	321 342 391	476

CH-53E Crew Chief	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL	CQ
T&R event requirements to maintain competency	200 201	210 211	221 223	231 233	241 243 341 343	350	390 391	281 381	223 291	321 342 391	476

CH-53E AO/AG	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL	CQ
T&R event requirements to maintain competency	200 201	210 211	221 223	231 233	241 243 341 343	350	390 391	281 381	223 291	321 342 391	476

b. Minimum Combat Leader Requirements. As a minimum, in order to be considered Core Competent, a unit must posses the following numbers of aircrew with the listed flight leadership designations.

Squadron	
DESIGNATION	Pilots
HAC	16
SEC LDR	9
DIV LDR	6
FLT LDR	5
AMC	4

Reserve Squadron	
DESIGNATION	Pilots
HAC	12
SEC LDR	8
DIV LDR	6
FLT LDR	4
AMC	2

Squadron (-)	
DESIGNATION	Pilots
HAC	12
SEC LDR	6
DIV LDR	4
FLT LDR	3
AMC	3

Detachment	
DESIGNATION	Pilots
HAC	4
SEC LDR	3
DIV LDR	2
FLT LDR	2
AMC	1

7. Qualifications And Designations Tables. The tables below delineate T&R events required to be completed to attain initial qualifications and designations. All stage lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and APR/MPR jackets. Loss of proficiency in all qualification events of a core skill causes the associated qualification to be lost. Regaining a qualification requires completing all R coded syllabus events associated with that qualification. Re-designation criteria shall be in accordance with the T&R Program Manual and paragraph 130.4 of this Manual.

Qualification (TRACKING CODE)	**Initial Event Qualification Requirements**
Instrument (601)	IAW OPNAVINST 3710.7
TERF (615)	230,231
DM (616)	250,350,450,451
NSQ-HLL (617)	211,222,223,232,233,291
NSQ-LLL (618)	320,321,330,331,391
AG	280,281,380,381

Designation (TRACKING CODE)	**Designation Requirements**
HAC	603,604,605
SEC LDR 606	606
DIV LDR 607	607
FLT LDR 608	608
AIR MSN CDR 609	609
TERFI	IAW MAWTS-1 Course Catalog
DMI	IAW MAWTS-1 Course Catalog
NSI	IAW MAWTS-1 Course Catalog
ARI	520, 521
WTI	IAW MAWTS-1 Course Catalog
AGI (CC/AO)	IAW MAWTS-1 Course Catalog
FCF (602)	602, IAW OPNAVINST 4790 and command specific directives
NSFI	IAW MAWTS-1 Course Catalog

a. Instructor Requirements. A squadron should possess the following numbers of aircrew with the listed instructor designations IAW this Manual and MCO 3500.12C (WTTP).

Squadron			
INSTRUCTOR DESIGNATION	Pilots	Crew Chiefs	AO/AGs
TERFI	6	5	
DMI	3	3	
NSI	5	5	
WTI	3	3	
AGI	NA	4*	
ARI	4	-	
*AO/AG designated as AGI’s may be used to fulfill this requirement.			

Reserve Squadron			
INSTRUCTOR DESIGNATION	Pilots	Crew Chiefs	AO/AGs
TERFI	4	3	
DMI	2	2	
NSI	3	3	
WTI	2	2	
AGI	-	3*	
ARI	3	-	

Squadron (-)			
INSTRUCTOR DESIGNATION	Pilots	Crew Chiefs	AO/AGs
TERFI	4	3	
DMI	2	2	
NSI	4	4	
WTI	2	2	
AGI	-	3*	
ARI	3	-	
*AO/AG designated as AGI’s may be used to fulfill this requirement.			

Detachment			
INSTRUCTOR DESIGNATION	Pilots	Crew Chiefs	AO/AGs
TERFI	2	2	
DMI	1	1	
NSI	1	1	
WTI	1	1	
AGI	-	1*	
ARI	1	-	
*AO/AG designated as AGI's may be used to fulfill this requirement.			

101. MARINE HEAVY HELICOPTER SQUADRON (CH-53D) UNIT CORE COMPETENCY

1. HMH Mission. Support the MAGTF Commander by providing assault support transport of combat troops, supplies, and equipment, day or night under all weather conditions during expeditionary, joint or combined operations

2. Mission Essential Task List (METL)

a. (UJTL TA 1.1.2) Conduct Shipboard Deck Helicopter Landing Qualifications

b. (UJTL TA 1.1.4) Conduct Sea and Air Deployment Operations
- Maintain the capability to deploy and operate from advanced bases, expeditionary airfields, Forward Operating Bases (FOBs), and amphibious shipping.
- Perform organizational maintenance on assigned aircraft.

c. (UJTL TA 1.2.1) Conduct Air Assault Operations and Air Assault
- Provide Assault Support Transport of Weapons, Equipment, Supplies, and Combat Troops using internal and/or external means.
- Provide support for casualty evacuation operations.
- Maintain self defense capability from ground-to-air and air-to-air threats.

d. (UJTL TA 1.2.3) Conduct Amphibious Assault and Raid Operations
- Conduct Assault support for maritime special operations.

e. (UJTL TA 4.2) Distribute Supplies and Provide Transport Service
- Conduct Aerial Re-supply.
- Provide support for mobile Forward Arming and Refueling Points (FARPs).

f. (UJTL TA 4.4) Conduct Joint Logistics Over-The-Shore Operations (JLOTS)

g. (UJTL TA 6.2) Conduct Joint Personnel Recovery
- Conduct Tactical Recovery of Aircraft and Personnel (TRAP) operations.
- Augment local Search and Rescue (SAR) assets.

h. (UJTL TA 6.4) Conduct Noncombatant Evacuation
- Provide Support for evacuation operations.

3. Table of Organization. Refer to Table of Organization 8950X managed by Total Force Structure, MCCDC, for current authorized organizational structure and personnel strength for CH-53D units. As of this publication date, CH-53D units are authorized:

SQUADRON
10 Aircraft
20 Pilots
16 Crewchiefs
16 Aerial Observers/Aerial Gunners

4. Core Capability. A core capable CH-53D unit is able to sustain 17 sorties listed below on a daily basis during contingency/combat operations. The sortie rates are based on 1.5 hour average sortie duration and assumes $\geq$ 70 percent FMC aircraft and $\geq$ 90 percent T/O aircrew on hand. If unit FMC aircraft < 70 percent or T/O aircrew < 90 percent, core capability will be degraded by a like percentage. A core capable unit is able to accomplish all tasks designated in the unit METL from a main base, expeditionary base, or amphibious platform.

5. METL/Core Skill Matrix. CH-53D core skills directly support the METL as follows:

	CH-53D CORE SKILL										CORE PLUS
METL	FORM	CAL	TERF	EXT	DM	AR	TAC	AG	HLL	LLL	CQ
a. Conduct Shipboard Deck Landing Qualifications	X	X							X	X	X
b. Conduct Sea and Air Deployment Operations	X	X	X	X	X	X	X	X	X	X	X
c. Conduct Air Assault Operations and Air Assault	X	X	X	X	X	X	X	X	X	X	X
d. Conduct Amphibious Assault and Raid Operations	X	X	X	X	X	X	X	X	X	X	X
e. Distribute Supplies and Provide Transport Service	X	X	X	X	X	X	X	X	X	X	X
f. Conduct Joint Logistics Over-The-Shore Operations (JLOTS)	X	X	X	X	X	X	X	X	X	X	X
g. Conduct Joint Personnel Recovery	X	X	X	X	X	X	X	X	X	X	X
h. Conduct Noncombatant Evacuation	X	X	X		X	X	X	X	X	X	X

6. CH-53D Core Model Minimum Requirements (CMMR). Squadron core competency reflects the minimum level of competency a squadron must achieve to perform its core capability. Squadron core competency is measured in terms of minimum unit Core Skill Proficiency (CSP) and minimum numbers of flight leaders per paragraphs a. and b. below:

a. Minimum Unit CSP Requirements. As a minimum, in order to be considered Core Competent, a unit must possess the following numbers of crews who are proficient in each core skill (unit CSP). In order to be considered proficient in a core skill (individual CSP), a crewmember must attain and maintain proficiency in core skill events, as delineated in paragraphs (1) and (2) below. The standard CH-53D crew consists of 2 Pilots, a Crew Chief, and an AO/AG.

* NOTE: CQ is a core plus skill. Proficiency in CQ is not required to obtain unit CSP. Below are CH-53D community recommended unit/individual CSP standards for CQ.

CH-53D Unit CSP Requirements Squadron				
CORE SKILL *CORE PLUS	Pilots	Crew Chiefs	AO/AGs	Crews
FORM	8	4	4	4
CAL	8	4	4	4
TERF	8	4	4	4
EXT	8	4	4	4
DM	4	2	2	2
AG	8	4	4	4
TAC	4	2	2	2
HLL	8	4	4	4
LLL	4	2	2	2
*CQ	4	2	2	2

(1) Events Required to Attain Individual CSP. To initially attain CSP, a crewmember must successfully complete all of the T&R events listed in the chart below for that core skill.

CH-53D Pilot	FORM	CAL	TERF	EXT	DM	AG	TAC	HLL	LLL	CQ
T&R event requirements to attain competency	210 211	220 221 222 223	230 231 232 233	240 241 242 243 340 341 343	250 350	280 380	290 291 390 391	211 222 223 232 233 291	320 321 330 331 342 391	270 471 472 473 474 475 476

CH-53D Crew Chief	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL	CQ
T&R event requirements to attain competency	200 201	210 211	220 221 222 223	230 231 232 233	240 241 242 243 341 343	350	290 291 390 391	280 281 380 381	211 222 223 232 233 291	320 321 330 331 342	471 472 473 474 475 476

CH-53D AO/AG	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL	CQ
T&R event requirements to attain competency	200 201	210 211	220 221 222 223	230 231 232 233	240 241 242 243 341 343	350	290 291 390 391	280 281 380 381	211 222 223 232 233 291	320 321 330 331 342	471 472 473 474 475 476

(2) Events Required to Maintain Individual CSP. To maintain CSP, a crewmember must maintain proficiency in all of the T&R events listed in the chart below for that core skill.

CH-53D Pilot	FORM	CAL	TERF	EXT	DM	AG	TAC	HLL	LLL	CQ
T&R event requirements to maintain competency	211	221 223	231 233	243 340 341 343	250 350	280 380	390 391	223 291	321 391	476

CH-53D Crew Chief	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL
T&R event requirements to maintain competency	200 201	210 211	221 223	231 233	241 243 341 343	350	390 391	281 381	223 291	321 342 391

CH-53D AO/AG	INT	FORM	CAL	TERF	EXT	DM	TAC	AG	HLL	LLL
T&R event requirements to maintain competency	200 201	210 211	221 223	231 233	241 243 341 343	350	390 391	281 381	223 291	321 342 391

b. Minimum Combat Leader Requirements. As a minimum, in order to be considered core competent, a unit must posses the following numbers of aircrew with the listed flight leadership designations.

Squadron	
DESIGNATION	Pilots
HAC	10
SEC LDR	6
DIV LDR	3
FLT LDR	2
AMC	2

7. Qualifications And Designations Tables. The tables below delineate T&R events required to be completed to attain initial qualifications and designations. All stage lectures, briefs, squadron training and prerequisites shall be complete prior to completing final events. Qualification and designation letters signed by the commanding officer shall be placed in individual NATOPS and APR/MPR jackets. Loss of proficiency in all qualification events of a core skill causes the associated qualification to be lost. Regaining a qualification requires completing all R coded syllabus events associated with that qualification. Re-designation criteria shall be in accordance with the T&R Program Manual and paragraph 130.4 of this Manual.

Qualification (TRACKING CODE)	**Initial Event Qualification Requirements**
Instrument (601)	IAW OPNAVINST 3710.7.
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NSQ-HLL (617)	211,222,223,232,233,291
NSQ-LLL (618)	320,321,330,331,391
AG	280,281,380,381

Designation (TRACKING CODE)	**Designation Requirements**
HAC	603,604,605
SEC LDR	606
DIV LDR	607
FLT LDR	608
AIR MSN CDR	609
TERFI	IAW MAWTS-1 Course Catalog
DMI	IAW MAWTS-1 Course Catalog

NSI	IAW MAWTS-1 Course Catalog
WTI	IAW MAWTS-1 Course Catalog
AGI (CC/AO)	IAW MAWTS-1 Course Catalog
FCF (602)	602, IAW OPNAVINST 4790 and command specific directives

a. Instructor Requirements. A squadron should possess the following numbers of aircrew with the listed instructor designations IAW the CH-53 T&R and MCO 3500.12C (WTTP).

Squadron			
INSTRUCTOR DESIGNATION	Pilots	Crew Chiefs	AO/AGs
TERFI	4	3	
DMI	2	1	
NSI	3	3	
WTI	1	1	
AGI		1*	

8. Training Progression Models. The CH-53 training progression model provides community recommended core skill, qualification, and designation attainment timelines for the average crewmember.

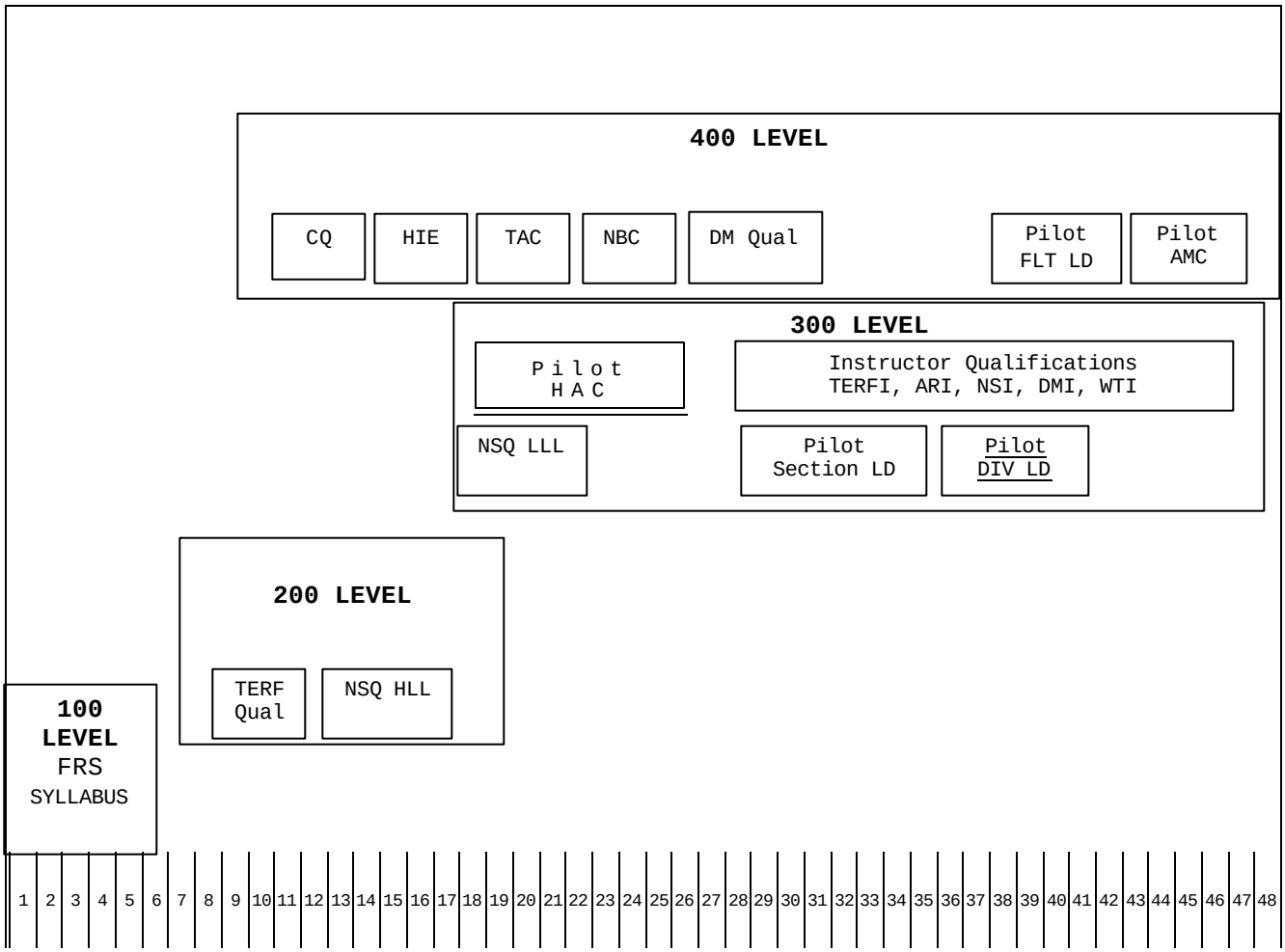

Figure 1-2.--CH-53 Training Progression Model.

102. POI FOR BASIC/TRANSITION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-24	CH-53D or CH-53E Core Skill Intro	FRS
25-55	Core Skill Basic	Tactical Squadron
56-68	Core Skill Advanced	Tactical Squadron
68+	Core Plus	Tactical Squadron

103. POI FOR CONVERSION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
3-12	Core Skill Introduction	Training Squadron
13-24	Core Skill Basic	Tactical Squadron
25-36	Core Skill Advanced	Tactical Squadron
36+	Core Plus	Tactical Squadron

104. POI FOR CH-53 SERIES CONVERSION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53D or CH-53E Core Skill Intro	FRS
3-24	Core Skill Basic	Tactical Squadron
25-35	Core Skill Advanced	Tactical Squadron
35+	Core Plus	Tactical Squadron

105. POI FOR REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-12	CH-53D or CH-53E Core Skill Intro	FRS
13-24	Core Skill Basic	Tactical Squadron
25-35	Core Skill Advanced	Tactical Squadron
36+	Core Plus	Tactical Squadron

106. POI FOR MODIFIED REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	Core Skill Introduction	Training Squadron

110. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION. Utilize academic courseware as outline in the Instructional System Development (ISD) program and Chapter 6 and 9 of the MAWTS-1 Course Catalog.

120. FLIGHT TRAINING FOR BASIC PILOT/TRANSITION (53E)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Basic Qualification	-	-	25.0/0.0
Familiarization	13/8	19.5/8.5	13.0/1.6
Instruments	4/5	6.0/5.0	3.0/1.0
Navigation	2/1	4.0/1.0	2.0/0.2
Formation	2/1	3.0/1.0	2.0/0.2
Confined Area Landings	3/1	5.0/1.0	3.0/0.2
External Loads	4/0	5.0/0.0	4.0/0.0
Terrain Flight	2/0	3.0/0.0	2.0/0.0
Review	1/0	1.5/0.0	1.3/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0	1.5/0.0
TOTAL FOR PHASE	32/16	49.0/16.5	56.8/3.2
COMBINED TOTAL	48	65.5	60.0
ACCUMULATION FOR BASIC POI	48	65.5	60.0

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Familiarization/Instruments	1/1	1.5/1.5	0.2/0.1
Formation	2/0	3.5/0.0	1.3/0.0
Confined Area Landings	5/0	8.0/0.0	2.3/0.0
Terrain Flight	4/0	7.0/0.0	2.9/0.0
External Loads	4/0	6.0/0.0	3.0/0.0
Defensive Measures	0/1	0.0/1.5	0.0/0.1
Aerial Refueling (53E)	0/1	0.0/1.0	0.0/0.1
Field Carrier Landing Practice	0/1	0.0/1.0	0.0/0.1
Aerial Gunnery	1/0	2.0/0.0	0.4/0.0
Tactics	2/0	4.0/0.0	2.0/0.0
TOTAL FOR PHASE	19/4	32.0/5.0	12.1/0.4
COMBINED TOTAL	23	37.0	12.5
ACCUMULATION FOR BASIC POI	71	102.5	72.5

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Confined Area Landings	3/0	5.0/0.0	2.5/0.0
Terrain Flight	2/0	3.5/0.0	2.5/0.0
External Loads	4/0	6.5/0.0	5.0/0.0
Defensive Measures	1/0	2.0/0.0	1.0/0.0
Aerial Refueling (53E)	3/0	4.5/0.0	3.5/0.0
Aerial Gunnery	1/0	1.5/0.0	0.5/0.0
Tactics	2/0	4.0/0.0	2.5/0.0
TOTAL FOR PHASE	16/0	27.0/0.0	17.5/0.0
COMBINED TOTAL	16	27.0	17.5
ACCUMULATION FOR BASIC POI	87	129.0	90

4. Core Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Helicopter Insertion & Extraction	3/0	4.5/0.0	0.9/0.0
Defensive Measures	2/0	2.0/0.0	1.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0	0.3/0.0
Field Carrier Landing Practice	3/0	3.0/0.0	2.5/0.0
Carrier Qualification	3/0	4.5/0.0	2.5/0.0
Tactics	4/0	10.0/0.0	2.8/0.0
TOTAL FOR PHASE	16/0	25/0.0	10.0/0.0
COMBINED TOTAL	16.0	25.0	10.0
TOTAL FOR BASIC POI	103	154.5	100.0

121. FLIGHT TRAINING FOR CONVERSION PILOT (53E)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	8/3	12.0/3.5
Instruments	3/2	4.5/2.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	4/0	5.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	20/6	29.5/6.5
COMBINED TOTAL	26	36.0
ACCUMULATION FOR CONVERSION POI	26	36.0

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization/Instruments	1/1	1.5/1.5
Formation	2/0	3.5/0.0
Confined Area Landings	5/0	8.0/0.0
Terrain Flight	4/0	7.0/0.0
External Loads	4/0	6.0/0.0
Defensive Measures	0/1	0.0/1.5
Aerial Refueling	0/1	0.0/1.0
Field Carrier Landing Practice	0/1	0.0/1.0
Aerial Gunnery	1/0	2.0/0.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	19/4	32.0/5.0
COMBINED TOTAL	23	37.0
ACCUMULATION FOR CONVERSION POI	49	73.0

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	3/0	5.0/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	4/0	6.5/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Refueling	3/0	4.5/0.0
Aerial Gunnery	1/0	1.5/0.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	16/0	27.0/0.0
COMBINED TOTAL	16	27
ACCUMULATION FOR CONVERSION POI	65	100.0

4. Core Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Field Carrier Landing Practice	3/0	3.0/0
Carrier Qualifications	3/0	4.5/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Tactics	4/0	10.0/0.0
TOTAL FOR PHASE	16/0	25.0/0.0
COMBINED TOTAL	16	25
TOTAL FOR CONVERSION POI	81	125.0

122. FLIGHT TRAINING FOR CH-53 SERIES CONVERSION PILOT (53D TO 53E)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	5/3	7.5/3.5
Instruments	2/2	3.0/2.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	4/0	5.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	16/6	23.5/6.5
COMBINED TOTAL	22	30.0
ACCUMULATION FOR SERIES CONVERSION POI	22	30.0

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	0/1	0.0/1.5
Confined Area Landings	3/0	5.0/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	3/0	4.5/0.0
Defensive Measures	0/1	0.0/1.5
Aerial Refueling	0/1	0.0/1.0
Field Carrier Landing Practice	0/1	0.0/1.0
Aerial Gunnery	1/0	2.0/0.0
TOTAL FOR PHASE	9/4	15.0/5.0
COMBINED TOTAL	13	20.0
ACCUMULATION FOR SERIES CONVERSION POI	35	50.0

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	1/0	2.0/0.0
External Loads	4/0	6.5/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Refueling	3/0	4.5/0.0
Aerial Gunnery	1/0	1.5/0.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	14/0	24.0/0.0
COMBINED TOTAL	14	24.0
ACCUMULATION FOR SERIES CONVERSION POI	49	74

4. Core Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Field Carrier Landing Practice	3/0	3.0/0.0
Carrier Qualifications	3/0	4.5/0.0
Tactics	3/0	8.0/0.0
TOTAL FOR PHASE	15/0	23.0/0.0
COMBINED TOTAL	15	23
TOTAL FOR CH-53 SERIES CONVERSION POI	64	97.0

123. FLIGHT TRAINING FOR REFRESHER PILOT (53E)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	4/3	6.0/3.5
Instruments	2/2	3.0/2.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	2/0	3.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	13/6	20.0/6.5
COMBINED TOTAL	19	26.5
ACCUMULATION FOR REFRESHER POI	19	26.5

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	0/1	0.0/1.5
Confined Area Landings	3/0	5.0/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	2/0	3.0/0.0
Defensive Measures	0/1	0.0/1.5
Aerial Refueling	0/1	0.0/1.0
Aerial Gunnery	1/0	2.0/0.0
TOTAL FOR PHASE	8/3	13.5/4.0
COMBINED TOTAL	11	17.5
ACCUMULATION FOR REFRESHER POI	30	44.0

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	1/0	2.0/0.0
External Loads	3/0	5.0/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Refueling (CH-53E)	2/0	3.0/0.0
TOTAL FOR PHASE	9/0	15.5/0.0
COMBINED TOTAL	9	15.5
ACCUMULATION FOR REFRESHER POI	39	59.5

4. Core Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Carrier Qualification	1/0	1.5/0.0
Tactics	3/0	8.0/0.0
TOTAL FOR PHASE	10/0	17.0/0.0
COMBINED TOTAL	10	17.0
TOTAL FOR REFRESHER POI	49	76.5

124. FLIGHT TRAINING FOR BASIC/TRANSITION PILOT (53D)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Basic Qualification	-	-.-	25.0/0.0
Familiarization	13/8	19.5/8.5	13.0/1.6
Instruments	4/5	6.0/5.0	3.0/1.0
Navigation	2/1	4.0/1.0	2.0/0.2
Formation	2/1	4.0/1.0	2.0/0.2
Confined Area Landings	3/1	5.0/1.0	3.0/0.2
External Loads	4/0	5.0/0.0	4.0/0.0
Terrain Flight	2/0	3.0/0.0	2.0/0.0
Review	1/0	1.5/0.0	1.3/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0	1.5/0.0
TOTAL FOR PHASE	32/16	50.0/16.5	56.8/3.2
COMBINED TOTAL	48	66.5	60.0
ACCUMULATION FOR BASIC POI	48	66.5	60.0

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Familiarization/Instruments	1/0	1.5/0.0	0.5/0.0
Formation	2/0	3.5/0.0	1.3/0.0
Confined Area Landings	4/0	6.5/0.0	2.5/0.0
Terrain Flight	4/0	7.0/0.0	3.1/0.0
External Loads	4/0	6.0/0.0	2.5/0.0
Field Carrier Landing Practice	0/1	0.0/1.0	0/0.2
Aerial Gunnery	1/0	2.0/0.0	0.4/0.0
Tactics	2/0	4.0/0.0	2.0/0.0
TOTAL FOR PHASE	18/1	30.5/1.0	12.3/0.2
COMBINED TOTAL	19	31.5/0.0	12.5
ACCUMULATION FOR BASIC POI	67	98.0	72.5

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Confined Area Landings	2/0	3.5/0.0	3.0/0.0
Terrain Flight	2/0	3.5/0.0	3.0/0.0
External Loads	4/0	6.5/0.0	5.0/0.0
Defensive Measures	1/0	2.0/0.0	1.5/0.0
Aerial Gunnery	1/0	1.5/0.0	1.0/0.0
Tactics	2/0	4.0/0.0	4.0/0.0
TOTAL FOR PHASE	12/0	21/0.0	17.5/0.0
COMBINED TOTAL	12	21/0.0	17.5
ACCUMULATION FOR BASIC POI	79	119	90

4. Core Skill Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Helicopter Insertion & Extraction	3/0	4.5/0.0	0.9/0.0
Defensive Measures	2/0	2.0/0.0	1.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0	0.3/0.0
Field Carrier Landing Practice	3/0	3.0/0.0	2.5/0.0
Carrier Qualification	3/0	4.5/0.0	2.5/0.0
Tactics	4/0	10.0/0.0	2.8/0.0
TOTAL FOR PHASE	16/0	25/0.0	10/0.0
COMBINED TOTAL	16	25	10.0
TOTAL FOR BASIC POI	95	144.0	100.0

125. FLIGHT TRAINING FOR CONVERSION PILOT (53D)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	8/3	12.0/3.5
Instruments	3/2	4.5/2.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	4/0	5.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	20/6	29.5/6.5
COMBINED TOTAL	26	36.0
ACCUMULATION FOR CONVERSION POI	26	36.0

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization/Instruments	1/0	1.5/0.0
Formation	2/0	3.5/0.0
Confined Area Landings	4/0	6.5/0.0
Terrain Flight	4/0	7.0/0.0
External Loads	4/0	6.0/0.0
Field Carrier Landing Practice	0/1	0.0/1.0
Aerial Gunnery	1/0	2.0/0.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	18/1	30.5/1.0
COMBINED TOTAL	19	31.5/0.0
ACCUMULATION FOR CONVERSION POI	45	67.5

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	4/0	6.5/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Gunnery	1/0	1.5/0.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	12/0	21.0/0.0
COMBINED TOTAL	12	21.0/0.0
ACCUMULATION FOR CONVERSION POI	57	88.5

4. Core Skill Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Field Carrier Landing Practice	3/0	3.0/0.0
Carrier Qualification	3/0	4.5/0.0
Tactics	4/0	10.0/0.0
TOTAL FOR PHASE	16/0	25/0.0
COMBINED TOTAL	16	25
TOTAL FOR CONVERSION POI	73	113.5

126. FLIGHT TRAINING FOR CH-53 SERIES CONVERSION PILOT (53E TO 53D)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	5/3	7.5/3.5
Instruments	2/2	3.0/2.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	4/0	5.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	16/6	23.5/6.5
COMBINED TOTAL	22	30.0
ACCUMULATION FOR SERIES CONVERSION POI	22	30.0

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	3/0	4.5/0.0
Field Carrier Landing Practice	0/1	0.0/1.0
Aerial Gunnery	1/0	2.0/0.0
TOTAL FOR PHASE	8/1	13.5/1.0
COMBINED TOTAL	9	14.5
ACCUMULATION FOR SERIES CONVERSION POI	31	44.5

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	1/0	2.0/0.0
Terrain Flight	1/0	2.0/0.0
External Loads	4/0	6.5/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Gunnery	1/0	1.5/0.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	10/0	18/0.0
COMBINED TOTAL	10	18/0.0
ACCUMULATION FOR SERIES CONVERSION POI	44	62.5

4. Core Skill Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Field Carrier Landing Practice	0/1	0.0/1.0
Carrier Qualifications	3/0	4.5/0.0
Tactics	3/0	8.0/0.0
TOTAL FOR PHASE	9/0	15.5/0.0
COMBINED TOTAL	9	15.5
TOTAL FOR CH-53 SERIES CONVERSION POI	56	85.5

127. FLIGHT TRAINING FOR REFRESHER PILOT (53D)

1. Core Skill Introduction

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	4/3	6.0/3.5
Instruments	2/2	3.0/2.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	2/0	3.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Core Skill Intro Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	13/6	20.0/6.5
COMBINED TOTAL	19	26.5
ACCUMULATION FOR REFRESHER POI	19	26.5

2. Core Skill Basic

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	0/1	0.0/1.5
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	2/0	3.0/0.0
Aerial Gunnery	1/0	2.0/0.0
TOTAL FOR PHASE	7/1	12.0/1.5
COMBINED TOTAL	8	13.5
ACCUMULATION FOR REFRESHER POI	27	40.0

3. Core Skill Advanced

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	1/0	2.0/0.0
Terrain Flight	1/0	2.0/0.0
External Loads	3/0	5.0/0.0
Defensive Measures	1/0	2.0/0.0
TOTAL FOR PHASE	6/0	11.0/0.0
COMBINED TOTAL	6	11.0
ACCUMULATION FOR REFRESHER POI	33	51.0

4. Core Skill Plus

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological, and Chemical	1/0	1.0/0.0
Carrier Qualification	1/0	1.5/0.0
Tactics	3/0	8.0/0.0
TOTAL FOR PHASE	10/0	17.0/0.0
COMBINED TOTAL	10	17.0
TOTAL FOR REFRESHER POI	43	68.0

128. FLIGHT TRAINING FOR MODIFIED REFRESHER PILOT (53E AND 53D)

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	3	4.5
Instruments	1	1.5
Formation	1	1.5
Confined Area Landings	1	1.5
External Loads	1	1.5
Core Skill Intro Pilot Check	1	2.0
TOTAL	8	12.5

129. INSTRUCTOR TRAINING

1. Day and Night Unaided Instructor Training (FRS only)

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	2	3.0
Instrument	1	2.0
Confined Area Landings	1	1.5
Formation	1	1.5
Externals	1	1.5
Standardization Check	1	1.5
TOTAL	7	11.0

2. Aerial Refueling Instructor

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Aerial Refueling	2	2.0
TOTAL	2	2.0

129.1 EVALUATION FLIGHTS

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Annual NATOPS Evaluation	1	1.5
Annual Instrument Evaluation	1	1.5
Helicopter Aircraft Commander	1	2.5
Section Leader	1	1.5
Division Leader	1	1.5
Flight Leader Check	1	1.5
Mission Commander Check	1	1.5
TERF Instructor	3	4.5
Aerial Refueling Instructor	2	2.0
Night System Instructor	5	6.0
TOTAL	17	24.0

130. GROUND/FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS

1. Purpose

a. To become familiar with aircraft limitations, operating procedures, and emergency procedures; demonstrate knowledge of NATOPS, local course rules, and safety regulations pertinent to flight operations.

b. The flight simulator is used for those events designated with an S. To provide commanding officers the maximum amount of flexibility for training, some events allow for the optional use of simulators or aircraft. Those events will use A/S for aircraft preferred, simulator optional and S/A for simulator preferred, aircraft optional.

c. The visual system is required for completion of syllabus events in the simulator except for instrument flights that can be flown without the visual system.

2. General

a. This Manual is written to allow for local conditions and yet remain unclassified. DC AVN and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics.

b. This Manual designs the combat capable training phase for an instructor and trainee to maximize training and to minimize syllabus support hours.

c. All flights shall terminate with a comprehensive debrief with emphasis on aircrew performance using all evaluation techniques.

d. Events annotated with an N must be flown at least 30 minutes after official sunset. Events annotated with (N) may be flown at night if desired.

e. Events annotated with NS must be flown with night vision goggles. Pilots may fly events annotated with (NS) with NVDs if desired.

f. All simulator S training codes should be completed prior to the appropriate flight in the aircraft for each stage.

g. All references to HNVS, HUD, Dual point Externals, TBFDS and Aerial Refueling apply only to the CH-53E. CH-53Ds will perform Single point externals on all external events.

3. Syllabus Assignment

a. Basic and Transition pilots will be assigned to fly the entire syllabus. Conversion and Refresher pilots will fly those flights designated by a C or R in the flight description. Series conversion pilots (CH-53D to CH-53E/CH-53E to CH-53D) will fly those flights designated by an H in the event description. The squadron training officer shall ensure all Aircrew Training Forms (ATFs) are entered in section 3 of the Aircrew Performance Record (APR) for all initial qualification events designated by C, R or H in the event description. These ATFs will replace ATFs previously entered in section 3. Figure 1-2 shows refly interval and Combat Readiness Percentage (CRP).

b. Squadron Refresher Syllabus. The Refresher syllabus is predicated on the experience of the Refresher pilot. A pilot in the Refresher syllabus should fly all R coded events. The commanding officer may tailor the Refresher syllabus to fit the experience of the Refresher pilot per T&R Program Manual. When the R coded events within a stage of training are complete, the pilot may be credited with the CRP from the entire stage of training. This assumes the Refresher pilot has previous proficiency in a stage of training. If the Refresher pilot has no previous proficiency in a stage or particular event, then the Refresher shall fly the entire stage or all events not previously flown.

4. Prior Designation/Qualification

a. Re-designation (HAC, SecLdr, DivLdr, FltLdr, AMC). Aircrew may be re-designated at the discretion of the commanding officer.

b. Re-qualification (TERFQ, NSQ HLL, NSQ LLL, ARQ, DMQ). Upon demonstration of proficiency in a specific core skill, an aircrew may be re-qualified at the discretion of the commanding officer.

c. Instructor Re-designation (TERFI, ARI, DMI, NSI). Upon demonstration of proficiency in a specific core skill, an aircrew may be re-designated as an instructor in that core skill (IAW this Manual and MAWTS-1 course catalog) at the discretion of the commanding officer.

5. Crew Position Designator. The emphasis in training for basic pilot training should be in the left seat through core skill introduction training.

6. Aircrew Evaluation Flights. All pilots shall have an evaluation form completed for the following:

a. NATOPS Check (CSIX-191, FL-604 and EVAL-600). A designated NATOPS instructor/assistant shall evaluate these flights.

b. Instrument Check (EVAL-601). A designated instrument instructor shall evaluate EVAL-601 annually.

c. All initial syllabus events or additional events recommended by the Squadron Standardization Board for the Basic, Conversion, Transition, or Refresher pilot will be flown with an aircraft commander who is proficient in that syllabus event and will evaluate the sortie and write an ATF.

d. For all syllabus events waived by the commanding officer, the squadron training officer shall place a waiver letter in section 3 of the APR.

7. CRM. Aircrews shall brief techniques of CRM for all flights and/or events.

131. CORE SKILL INTRODUCTION

1. Familiarization (FAM)

a. Purpose. To develop preliminary flight skills in the CH-53 and become familiar with aircraft flight characteristics, limitations, and emergency procedures; to develop proficiency in all maneuvers contained in the

familiarization stage, and to develop proficiency to conduct safe operations during day and night.

b. General

(1) Prior to FAM-110, complete appropriate CBT/audio-visual training and conduct a thorough preflight, post flight inspection and a cockpit familiarization to include a blindfold cockpit check. FAM-110 through FAM-115 will normally be completed prior to flying higher stage events. Discuss and become thoroughly familiar with all aspects of CRM applicable to familiarization stage maneuvers as described in the appropriate CH-53 NATOPS Flight Manual and FRS Standardization Manual.

(2) Pilots shall conduct Core Skill Introduction Night Systems (NS) phase flights under High Light Level (HLL) ambient conditions with a Night Systems FAM Instructor (NSFI) or Night Systems Instructor (NSI).

c. Crew Requirement. IP/RAC/CC. AO required for FAM-121 and FAM-122.

d. Ground Training. Pilots should complete the appropriate simulator training prior to beginning the Core Skill Introduction training flight.

e. Simulator Training. (8 Events, 8.5 Hours).

f. Flight Training. (13 Flights, 19.5 Hours).

SFAM-100 1.0 C,R,H S

Goal. Introduce normal cockpit procedures, start procedures, and shutdown procedures.

Requirement
Introduce:
- Pre-start checklist.
- Post APP start checklist.
- Starting engines/rotors checklist.
- Pre-taxi checklist.
- Cargo ramp and door procedures checklist.
- Operation of engine trim switches.
- Cruise checklist.
- Fuel transfer checklist.
- Monitoring of instruments (fuel gauges).
- Operation of the ICS and radios.
- Fuel management.
- Pre-landing checklist.
- Shutdown checklist.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-101 1.0 S

Goal. Introduce aircraft emergencies, normal ground and flight procedures. Review start/shutdown procedures.

Requirement
Introduce:
- Aircrew brief.
- External fuel tank jettison.
- Cargo ramp/door operation.
- Engine start emergencies.
- Vertical takeoff to a hover.
- Transition to forward flight.
- Normal approaches to a hover and normal vertical landing.
- Engine compartment fire on the ground.
- Single and/or dual engine compartment fires in-flight.
- Simultaneous engine compartment fires in-flight.
- APP or cabin heater fire.
- Fuselage fire.
- Fuel dump.

Practice:
- Start/shutdown procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-102 1.0 S

Goal. Introduce engine malfunctions. Practice cockpit and flight procedures, start/shutdown checklist and all previously introduced emergencies.

Requirement
Introduce:
- Blade/pylon fold system switchology.
- CH-53 NATOPS brief/CH-53 NATOPS debrief.
- Maximum performance takeoff.
- Straight-in approach.
- Engine restarts during flight.
- Crosswind landing.
- Single engine failure (hover and takeoff).
- Effects of gross weight on single and/or dual engine performance.
- Single and/or dual engine failure at altitude.
- Engine shutdown in-flight.
- Compressor stall.
- Engine power loss.
- Engine post-shutdown fire.

Practice:
- Cockpit and flight procedures.
- Start/shutdown checklist.
- All previously introduced emergencies.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-103 1.0 S

Goal. Introduce running landings and autorotations. Practice aircraft emergencies, previously introduced flight procedures and normal cockpit procedures.

Requirement

Introduce:
- Running takeoff/landing.
- Wave-off.
- Single and/or dual engine wave-off/landing.
- Power recovery autorotation.
- High angle of bank maneuvering and the effects of variables (angle of bank, power required, descent rate, gross weight, temperature, density altitude, etc.) on the performance of the aircraft.
- Dual engine failure at altitude.
- Engine overspeed.
- Single and/or dual engine failure (hover/takeoff).
- Nf flex shaft failure.

Practice:
- Aircraft emergencies.
- Previously introduced flight procedures.
- Normal cockpit procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-104 1.0 S

Goal. Introduce gearbox malfunctions. Introduce basic CRM concept. Practice previously introduced emergency and flight procedures.

Requirement
Introduce:
- Engine chip detector light.
- Control linkage failure.
- Power deterioration.
- Engine oil pressure high caution light, high oil temperature, engine oil quantity low.
- Nose gearbox chip detector light/failure.
- Accessory gearbox oil system failure.
- Accessory gearbox chip detector light/failure.
- Main gearbox oil system failures.
- Main gearbox chip locator light/failure.
- Power train failures.
- Tail rotor drive system failure, tail rotor gearbox or intermediate gearbox failure, and tail rotor or intermediate gearbox chip detector light.

Practice:
- Previously introduced emergencies.
- Flight procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-105 1.5 C,R,H S

Goal. Introduce communication skills IAW CRM techniques. Practice all ground, flight, and aircraft emergency procedures.

Requirement
Introduce:
- Obstacle takeoff and approach.
- Smoke and fume elimination.
- AFCS computer malfunctions/mode failures (53E), total AFCS failure.
- BIM/Blade Pressure caution light (in-flight).
- Approach and landing with tail rotor control system failure.
- Tail rotor tandem servo malfunction.
- Fuel filter bypass light.
- Hydraulic fire in main rotor pylon.
- Use of AN/ARN 151 GPS system.
- Sender/receiver responsibilities and overcoming communication barriers. Discuss ICS switchology and techniques, visual and standard terminology.

Practice:
- Ground, flight, and aircraft emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-106 1.0 C,R,H S

Goal. Conduct Progress Check. Introduce communication skills IAW CRM techniques.

Requirement
Introduce:
- Ground resonance procedure.
- Power settling (vortex ring state).
- Settling with power.
- Dynamic rollover.
- Electrical fire.
- Alternating/Direct current system failures.
- Rotor damper failure.
- Lightning strike.
- Most conservative response rule, the two-challenge rule, and task saturation with compound emergencies.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SFAM-107 1.0 S NS

Goal. Introduce NS adaptation.

Requirement
Introduce:
- NVD set-up/operation.
- Cockpit lighting.
- Blind cockpit drills.
- NVD malfunctions.
- FLIR system and operation (53E).
- NVD goggle/degoggle procedures.
- NVD scan techniques.
- Basic FAM pattern and approaches utilizing NVDs.
- Emergencies while wearing NVDs.
- NVD failure.
- FLIR operation and utilization (53E).

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. NITE lab.

Ordnance. N/A.

External Syllabus Support. WST/APT.

FAM-110 1.5 C,H 1 CH-53

Goal. Introduce start, normal ground, and flight procedures including low work and normal approaches.

Requirement
Discuss:
- Fuel management.
- Fuel dump system/procedures and auxiliary fuel tank jettison system/parameters.
- Fuel supply system, fuel transfer system, fuel purge system (53E), and pressure refueling system.

Introduce:
- Normal cockpit procedures.
- Starting procedures.
- Radio procedures.
- Taxiing.
- Vertical takeoffs and landings.
- Transition to forward flight.
- Operation of engine trim switches.
- Normal approaches to a hover.
- Ramp operation.
- Shutdown procedures.
- Conduct an area familiarization and local course rules flight.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. Preflight walk-around, Egress and local course rules exam.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-111 1.5 C 1 CH-53

Goal. Introduce precision hover/low work. Practice start, normal ground, and previously introduced flight procedures.

Requirement
Discuss:
- Engine restart in-flight.
- Blade and pylon fold.

Utility hoist procedures (53E).
Effects of Pilot Induced Oscillations (PIO).
Exhaust gas re-ingestion (53E).
Effects of high AOB maneuvering and subsequent aircraft response.
No 2 engine dual thermal detection system (53E).
No 2 engine over-heat caution light in flight (53E).
Engine start/ignition system.
Hot start, hung start.
AOB limitations.
Emergency shutdown procedures.

Demonstrate:
High AOB maneuvers.

Introduce:
Square patterns/turns on the spot.
Precision (stable) hover.
Air taxi.
Single engine and/or dual engine flight characteristics at altitude.

Practice:
Start procedures.
Normal ground procedures.
Previously introduced flight procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-112 1.5 C 1 CH-53

Goal. Introduce engine failure(s) at altitude, running takeoffs and landings, precision approaches, and practice autorotations.

Requirement
Discuss:
Engine system/limitations.
Engine overspeed/Nf flex shaft failure.
Compressor stall.
Engine power loss.
Engine high/low oil pressure.
Engine high oil temperature.
Engine chip detector light.
Control linkage failure.
Effects of gross weight on single and/or dual engine performance.
Engine shutdown in flight/fuel siphoning.
Engine restart in flight.

Introduce:
- Simulated single and/or dual engine failure at altitude.
- Running takeoffs and landings.
- Precision approaches to a hover.
- Autorotations with power recovery.

Practice:
- Cockpit procedures.
- Hover/low work.
- Previously introduced FAM maneuvers.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-113 1.5 1 CH-53

Goal. Introduce no hover landings. Practice previously introduced FAM maneuvers and simulated emergency procedures.

Requirement

Discuss:
- The effects of aircraft gross weight on single and/or dual engine performance capability.
- Single/dual engine wave-off.
- Fire detection/extinguishing system.
- Engine compartment fire on the ground.
- Engine compartment fires in flight.
- APP or cabin heater fire.
- Fuselage fire.
- Hydraulic fire in main rotor pylon.
- Engine post shutdown fire.
- Electrical fire.
- Smoke and fume elimination.
- Fire during ground refueling.

Introduce:
- No hover landings.
- Single and/or dual engine wave-offs.
- Simulated single and/or dual engine failure during takeoff.
- Simulated single and/or dual engine approaches and landings (running and to a spot).
- Simulated single and/or dual engine failure above 50 feet AGL.

Practice:
- Previously introduced FAM maneuvers.
- Simulated emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-114 1.5 C,R,H 1 CH-53

Goal. Introduce simulated partial/total AFCS failure. Practice FAM and previously introduced simulated emergency procedures.

Requirement
Discuss:
- AFCS system/functions.
- Inner/outer loop (53E).
- AFCS servo functions.
- AFCS servo hardover.
- Longitudinal bias actuator (53E).
- FAS functions (53E).
- Trim functions.
- Desensitizer failure (53E).
- AFCS computer malfunctions/mode failures.
- Total AFCS failure.
- Ground resonance.

Introduce:
- Obstacle takeoff, approach.
- Partial/total AFCS failure.

Practice:
- Previously introduced FAM maneuvers.
- Simulated emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-115 1.5 1 CH-53

Goal. Introduce high AOB maneuvers. Practice all FAM and simulated emergency procedures.

Requirement
Discuss:
- BIM/IBIS blade systems.
- BIM/Blade pressure caution light in flight.
- Flight control system.
- Control couplings.
- Damper system/failure.

Primary tandem servos operation/malfunction.
Approach and landing with a tail rotor control system malfunction.

Introduce:
High AOB maneuvers.

Practice:
All FAM maneuvers.
Simulated emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-116 1.5 C,R,H 1 CH-53

Goal. Practice all FAM maneuvers, and simulated emergency procedures.

Requirement
Discuss:
Transmission system/limitations.
Chip detection system.
Nose gearbox chip location light.
Nose gearbox failure.
Accessory gearbox oil system failure.
Accessory gearbox chip locator light.
Accessory gearbox failure.
Main gearbox chip locator light.
Main gearbox oil system failure.
Loss of main gearbox lubrication.
Power train failure.
Tail rotor or intermediate gearbox chip detector light.
Tail rotor gearbox or intermediate gearbox failure.
Tail rotor drive system failure.
Pylon unsafe for flight light.

Practice:
All FAM maneuvers.
Simulated emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-117 1.5 1 CH-53

Goal. Practice all FAM maneuvers and simulated emergency procedures. CH-53 NATOPS.

Requirement
Discuss:
- Rotor brake system.
- APP.
- Hydraulic power supply systems.
- Hydraulic power supply system failures.
- Utility hydraulic subsystems.

Practice:
- All FAM maneuvers.
- Simulated emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-118 1.5 C,R,H 1 CH-53

Goal. Review all FAM maneuvers and simulated emergency procedures.

Requirement
Discuss:
- Ground cushion and ground effect.
- Effect of wind on translational lift.
- Effect of temperature and pressure altitude on power available.
- Power required for flight at various airspeeds (hover to V_{MAX}).
- Effects of gross weight, altitude, temperature, turbulence, and wind on power required for hover both in and out of ground effect.
- Effects of gross weight, altitude, temperature, and turbulence on blade stall.
- Maximum speed level flight with turns for existing ambient conditions.
- Conditions leading to power settling and settling with power.
- Landing gear system.
- Landing gear system failure.
- Bearing Monitor System (53E).
- Bearing VIB or TEMP DETECT and LIMIT (53E).
- BMS fault isolation (53E).

Practice:
All FAM maneuvers.
Simulated emergency procedures.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.
Ordnance. N/A.

External Syllabus Support. N/A.

FAM-119 1.5 1 CH-53

Goal. Conduct Progress Check.

Requirement
Practice:
All FAM maneuvers.
Simulated emergency procedures.

Performance Standards. Demonstrate proficiency of FAM maneuvers IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. CH-53 NATOPS open book exam.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-120 1.5 C,R,H 1 CH-53 N

Goal. Introduce FAM maneuvers at night.

Requirement
Discuss:
Aircraft lighting systems.
Electrical failures.
Electrical power supply system.
Single and multiple generator failure.
Single and dual rectifier failure.
Minimum aircraft equipment required for night flight.

Introduce:
Normal procedures and maneuvers under conditions of darkness at a lit airfield.
Night basic airwork, low work, and landings with various light configurations.
Tip path plane awareness.
HNVS operation (53E).

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-121 1.5 C 1 CH-53 NS

Goal. Introduce NVD low work and pattern work.

Requirement
Discuss:
- NVD operations/failures.
- Cockpit lighting.
- Crew coordination.
- Comfort level.
- Low altitude emergencies
- Inadvertent IMC procedures.
- Aircraft external lighting.
- NVD visual characteristics and limitations.
- Scan techniques.

Introduce:
- Use of NVDs while performing taxi, basic low work, hover, and vertical takeoffs/landings at an unlit field or packed surface.

Performance Standards. IAW CH-53 NATOPS, FRS Standardization Manual, and MAWTS-1 NVD manual.

Prerequisites. The Night Imaging and Threat Evaluation (NITE) Lab syllabus. FAM-120.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-122 1.5 C,R,H 1 CH-53 NS

Goal. Practice low work, takeoffs/landings and pattern work while using NVDs.

Requirement
Discuss:
- Solar Lunar Almanac Program (SLAP).
- Light Interference Filters (LIFS).
- Effects of shadowing on NVD operations.
- Effects of atmospheric conditions on NVD performance.
- Blooming/de-gaining.
- Approach pattern.
- External aircraft lighting.
- Spectrum viewed by NVDs (FLIR/NVDs).

Practice:
- Use of NVDs while performing taxi, basic low work, hover, and vertical takeoffs/landings at an unlit field or packed surface.

Performance Standards. IAW CH-53 NATOPS, FRS Standardization Manual, and MAWTS-1 NVD manual.

Prerequisites. FAM-121.

Ordnance. N/A.

External Syllabus Support. N/A.

2. Instruments (INST)

a. Purpose. To develop proficiency in instrument flight procedures while using all installed navigation aids.

b. General

(1) All instrument stage flights should terminate with an instrument approach, when possible.

(2) Pilots may use the simulator for any instrument flight requirement; however, they may use it for no more than 50 percent of the total instrument syllabus requirements. The simulator will not satisfy the OPNAV night minimums requirement.

c. Crew Requirement. IP/RAC/CC (AO required for NVD events).

d. Simulator Training. (5 Events, 5.0 Hours).

e. Flight Training. (4 Flights, 6.0 Hours).

SINST-130 1.0 S

Goal. Introduce basic instruments, TACAN approaches, and decision making IAW CRM techniques.

Requirement
Introduce:
- Instrument flight checklist.
- Instrument takeoff.
- Level speed change.
- Standard rate timed turns.
- Vertical S-1 pattern.
- Oscar pattern.
- Turn pattern.
- TACAN approach.
- Point-to-point navigation.
- Holding.
- Decision making in the CH-53 IAW ACT techniques.
- Troubleshooting strategies for degraded aircraft systems in IMC.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SINST-131 1.0 C,R,H S

Goal. Introduce partial panel flight, VOR/ADF procedures and adaptability/flexibility IAW CRM techniques.

Requirement
Introduce:
Partial panel flight.
VOR/ADF approach.
Holding.
Adaptability/flexibility in the CH-53 IAW ACT techniques.

Discuss:
Changes in mission from the briefing, crew-member incapacitation, and overcoming personality differences within the cockpit and cabin.

Practice:
TACAN procedures.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SINST-132 1.0 C,R,H S

Goal. Introduce ILS/localizer approaches (53E) and mission analysis IAW CRM techniques. Practice TACAN/ADF approaches (53D). Practice aircraft emergency procedures for both types of aircraft.

Requirement
Introduce:
ILS (53E), and localizer approaches (53E).
Mission analysis in the CH-53 IAW CRM techniques.

Discuss:
The three stages of mission analysis, and standardized procedures.

Practice:
TACAN and VOR approaches (53D).

Previously introduced emergency procedures.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

SINST-133 1.0 S

Goal. Introduce unusual attitudes and recovery procedures, PAR, ASR approaches and situational awareness considerations in the CH-53 IAW CRM techniques. Practice aircraft emergency procedures.

Requirement
Introduce:
Unusual attitudes and recovery procedures.
PAR and ASR approaches.
Situational awareness considerations in the CH-53 in accordance with CRM techniques.
Task fixation during an instrument approach with an emergency or degraded system.

Practice:
Aircraft emergency procedures.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. CRM/APT.

SINST-134 1.0 S

Goal. Introduce radio failure, ATC procedures in IMC conditions and leadership principles IAW CRM techniques.

Requirement
Introduce:
HF Radio.
IFR departure.
COMM/NAV failure under IMC.
Single and/or dual engine missed approach.
IFR canned route (Flight planning).
Leadership principles in the CH-53 IAW CRM techniques.
Command authority, crewmember relationships in the cockpit and cabin, and division of tasks.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

INST-135 1.5 A/S 1 CH-53 (N)(NS)

Goal. Introduce basic instrument procedures and instrument coordination patterns.

Requirement
Introduce:
- Instrument checklist.
- Instrument takeoff (ITO).
- Attitude instrument flying.
- Standard rate/half standard rate turns. Recovery from unusual attitudes.
- Vertical S-1.
- Oscar patterns.
- Partial panel.
- AFCS failure.
- Inadvertent entry into IFR conditions.
- Lost plane procedures.
- Lightning strike.
- Emergency descent.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

INST-136 1.5 C,R,H A/S 1 CH-53 (N)(NS)

Goal. Introduce ADF, VOR (53E), and TACAN procedures.

Requirement
Discuss:
- Approach minimums and helicopter-only approaches.

Introduce:
- Time-distance checks.
- ADF procedures.
- Operation of the transponder modes.
- VOR procedures.
- TACAN procedures.
- Point-to-point navigation.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

INST-137 1.5 C,R,H A/S 1 CH-53 (N)(NS)

Goal. Introduce precision approaches.

Requirement
Discuss:
- BDHI/course indicator switches.
- ILS/LOC and LOC back course approaches (53E).

Introduce:
- LOC/ILS procedures (53E).
- PAR procedures.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

INST-138 1.5 C A/S 1 CH-53 (N)(NS)

Goal. Conduct IFR flight to an outlying airfield. Instrument progress check.

Requirement. Plan, file, brief, and fly an IFR flight away from home field.

Discuss:
- Range performance charts in the CH-53 NATOPS Manual.

Performance Standards. IAW CH-53 NATOPS, Instrument NATOPS, FLIP publications and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

3. Navigation (NAV)

a. Purpose. To navigate without radio navigational aids and identify positions by using charts and maps.

b. Crew Requirement. 141: IP/RAC/CC.
142: IP/RAC/CC/AO.

c. Ground Training. N-PFPS flight planning, GPS course as required by FRS.

d. Simulator Training. (1 Period, 1.0 Hour).

e. Flight Training. (2 Flights, 4.0 Hours).

SNAV-140 1.0 S

Goal. Introduce use of N-PFPS, GPS and HNVS.

Requirement. Utilize N-PFPS to develop a route card for GPS programming to a minimum of six waypoints.

Discuss:
GPS set-up, programming, operation, and use.

Introduce:
Use of Global Positioning System (GPS) and HNVS operation (53E).

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

NAV-141 2.0 1 CH-53

Goal. Introduce visual and GPS navigation.

Requirement. While using 1:250,000 and 1:50,000 maps, plan a navigation flight to a minimum of six terrain features using N-PFPS for planning. Pilots should conduct this flight between 200 and 500 feet AGL.

Discuss:
Navigation techniques.
Map preparation.
Checkpoint selection.
Boundaries/limiting features.
Wind correction in navigation.
Chart Update Manual (CHUM).

Portable Flight Planning Software (N-PFPS).
GPS operation/use.

Introduce:
In-flight route changes.
Use of Global Positioning System (GPS).

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

NAV-142 2.0 1 CH-53 NS

Goal. Practice NVD navigation. Incorporate the use of N-PFPS and GPS.

Requirement. Plan and navigate to a minimum of six predetermined check points while using 1:250,000 and 1:50,000 scale maps.

Discuss:
Use of the FLIR (53E).
Low level hazards.
Stress map interpretation.
Dead reckoning techniques.

Practice:
Use of GPS and N-PFPS.

Performance Standards. IAW CH-53 NATOPS, MAWTS-1 NVD Manual and FRS Standardization Manual.

Prerequisites. FAM-122.

Ordnance. N/A.

External Syllabus Support. N/A.

4. Formation (FORM)

a. Purpose. To develop parade and cruise formation principles and techniques.

b. Crew Requirement. 151: IP/RAC/CC.
152: IP/RAC/CC/AO.

c. Simulator Training. (1 Period, 1.0 Hour).

d. Flight Training. (2 Flights, 3.0 Hours).

SFORM-150 1.0 C,R,H S

Goal. Introduce day/night formation principles.

Requirement
Discuss:
Aircraft lighting, closure rate, recovery from unusual attitudes, CRM, and comfort level.

Introduce:
Day and NVD takeoffs, cruise principles, crossovers, and section approaches.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisite. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

FORM-151 1.5 C,R,H 2 CH-53

Goal. Introduce parade, cruise formation and section landings.

Requirement
Discuss:
Visual checkpoints for formation position.
Formation considerations.
Parade and Cruise formations.
Cruise turn principles.
Loss of visual contact.
Break-up and rendezvous.
Over-run procedures.

Introduce:
Section takeoffs, parade position, crossovers, breakups, rendezvous, lead changes, landings, cruise formations, and IMC break-up.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisite. CAL-161 if conducted to a CAL site.

Ordnance. N/A.

External Syllabus Support. N/A.

FORM-152 1.5 2 CH-53 NS

Goal. Introduce NVD formation procedures and section landings.

Requirement
Discuss:
Aircraft lighting.
Closure rate.
CRM and comfort level.
NVD visual checkpoints for formation position.

Introduce:
Night section takeoffs.
Cruise principles.
Crossover.
Lead changes
Section landings.

Performance Standards. IAW CH-53 NATOPS, MAWTS-1 NVD Manual and FRS Standardization Manual.

Prerequisite. FAM-122, FORM-151. (CAL-163 if FORM-152 is conducted to a CAL site)

Ordnance. N/A.

External Syllabus Support. N/A.

5. Confined Area Landings (CAL)

a. Purpose. Develop takeoff and landing skills in confined areas.

b. Crew Requirement. 161/162: IP/RAC/CC.
163: IP/RAC/CC/AO.

c. Simulator Training. (1 Period 1.0 Hour).

d. Flight Training. (3 Flights, 5.0 Hours).

SCAL-160 1.0 S NS

Goal. Introduce night systems CAL approaches.

Requirement
Discuss:
Instrument scan requirements.
Crew coordination.

Performance Standards. IAW CH-53 NATOPS, MAWTS-1 NVD Manual and FRS Standardization Manual.

Prerequisite. N/A.

Ordnance. N/A.

External Syllabus Support. WST/APT.

CAL-161 1.5 C,R,H 1 CH-53

Goal. Practice precision approaches and introduce their application to CALs.

Requirement
Discuss:
- Landing gear system/limitations.
- Dynamic rollover.
- Slope landing technique/limitations.
- Loss of visual reference during landing.
- Power settling.
- Settling with power.
- Main and tail rotor clearance factors over sloping or uneven terrain.
- LZ considerations.

Practice:
- Precision approaches to confined areas.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisite. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

CAL-162 1.5 2 CH-53

Goal. Introduce section CAL approaches and landings.

Requirement
Discuss:
- Hazards associated with section CAL landings.
- CRM.

Introduce:
- Day Section CAL approaches and landings.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisite. CAL-161 and FORM-151. CAL-162 may be flown in conjunction with FORM-151.

Ordnance. N/A.

External Syllabus Support. N/A

CAL-163 2.0 1 CH-53 NS

Goal. Introduce NVD confined area landings.

Requirement
Discuss:
Precision obstacle approaches.
CRM/comfort level.
Aircraft lighting.

Practice:
Night CAL approaches and takeoffs with NVDs.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisite. FAM-122 and CAL-161.

Ordnance. N/A.

External Syllabus Support. N/A.

6. External Loads (EXT)

a. Purpose. To develop skills necessary for external cargo operations.

b. General. Prior to EXT-170, refer to operational and safety considerations discussed in the appropriate NATOPS Flight Manual and External Air Transport Message. Discuss and become familiar with all aspects of CRM applicable to external operations as described in the appropriate CH-53 NATOPS Flight Manual.

c. Crew Requirement. IP/RAC/CC/AO.

d. External Syllabus Support. Helicopter Support Team (HST).

e. Flight Training. (4 Flights, 5.0 Hours).

EXT-170 1.0 C,H 1 CH-53

Goal. Introduce Single point external cargo operations.

Requirement
Discuss:
Precision hover.
Flight envelopes with external loads.
Weight and balance calculations.
Power settling/settling with power.
Operational power checks.
Single point performance checks.
Single point suspension system/operations.
Cargo pickup and delivery procedures.
Power available/required considerations.
Cargo release modes.
Cargo jettison procedures.
Hook open advisory light in flight.
DSEN failure.

Introduce:
Cargo pickup and release procedures.

CRM.
Voice signals/standardized terminology.
Perform five hookups and releases, or until proficiency is demonstrated.

Performance Standards. IAW CH-53 NATOPS, External Air Transport Message and FRS Standardization Manual.

Prerequisite. CAL-161.

Ordnance. N/A.

External Syllabus Support. HST.

EXT-171 1.0 C,H 1 CH-53 NS

Goal. Introduce single point external cargo operations utilizing NVDs.

Requirement
Discuss:
CRM.
Comfort level.
NVD scan techniques.
Aircraft emergencies.
Cargo jettison procedures.
Power requirements.
Aircraft lighting.
Landing zone markings.

Introduce:
External cargo pickup and delivery utilizing NVDs.
Perform five hookups and releases, or until proficiency is demonstrated.

Performance Standards. IAW CH-53 NATOPS, External Air Transport Message and FRS Standardization Manual.

Prerequisite. EXT-170.

Ordnance. N/A.

External Syllabus Support. HST.

EXT-172 1.5 C,R,H 1 CH-53

Goal. Introduce dual point procedures in the 53E. Review external cargo operations in the 53D.

Requirement
Discuss:
Dual point suspension system (53E).
Dual point suspension system operations/limitations (53E).
CRM.
Emergencies encountered during external operations.

Forward/Aft hook open advisory light in flight.
Pilot induced/assisted oscillations.
Cargo jettison.
CG load indicator system (53E).

Introduce:
Perform five hookups and releases, or until proficiency is demonstrated.

Performance Standards. IAW CH-53 NATOPS, External Air Transport Message and FRS Standardization Manual.

Prerequisite. CAL-161.

Ordnance. N/A.

External Syllabus Support. HST.

EXT-173 1.5 C,R,H 1 CH-53 NS

Goal. Introduce dual point procedures at night utilizing NVDs (53E). Review external cargo operations at night (53D).

Requirement
Discuss:
NVD considerations.
CRM
Comfort level.
Scan techniques.
Aircraft emergencies.
Cargo jettison procedures.
Aircraft lighting.
Landing zone markings.

Introduce:
External cargo pickup and release procedures utilizing NVDs.

Performance Standards. Perform five hookups and releases or until proficiency is demonstrated IAW CH-53 NATOPS, External Air Transport Message and FRS Standardization Manual.

Prerequisite. EXT-171 (53D). EXT-172 (53E).

Ordnance. N/A.

External Syllabus Support. HST.

7. Terrain Flight (TERF)

a. Purpose. To introduce skills necessary to perform TERF maneuvers safely. Emphasize the importance of crew coordination, comfort level, and standard terminology.

b. General

(1) T&R Program Manual requires a designated TERF instructor for all initial TERF flights.

(2) CH-53 TAC Manual contains all maneuver descriptions, and the current MAWTS-1 Helicopter Academic Support Package explains all maneuvers. The MAWTS-1 Academic Support Package contains the prerequisite academic lectures that support the TERF stages.

(3) T&R Program Manual establishes all currency requirements/TERF altitude and airspeed limitations.

(4) The RAC shall complete academic training prior to commencing the TERF flight syllabus.

c. Crew Requirement. IP/RAC/CC/AO.

d. Ground Training. Pilots shall complete "Terrain Flight Introduction" in the MAWTS-1 Academic Support Package prior to the flight.

f. Flight Training. (2 Flights, 3.0 Hours)

TERF-180 1.5 C,R,H 1 CH-53

Goal. Introduce TERF maneuvers. Demonstrate TERF navigation.

Requirement
Discuss:
- TERF maneuvers.
- CRM.
- Comfort level.
- Reduced reaction time.
- Emergency procedures at low altitudes.
- Climb-to-cope.
- Standardized terminology.
- Common mistakes.
- Hazard maps.
- Currency requirements.
- Blade walk-around.

Introduce:
- Operational power checks.
- Masking and unmasking.
- TERF turns.
- Rolls, bunts.
- Quick stops.
- Low level/contour profiles.
- Using a 1:50,000 scale map, demonstrate TERF navigation.

Performance Standards. IAW CH-53 NATOPS, CH53 Tactical Manual, and FRS Standardization Manual.

Prerequisite. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

TERF-181 1.5 1 CH-53

Goal. Introduce TERF navigation. Practice TERF maneuvers.

Requirement
Discuss:
- CRM.
- Comfort levels.
- Common terms.
- Obstacle clearance.
- Low altitude emergencies.

Practice:
- TERF maneuvers and contour profile navigation.

Performance Standards. IAW CH-53 NATOPS, CH-53 TAC Manual and FRS Standardization Manual.

Prerequisite. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

8. Review (REV)

a. Purpose. To demonstrate proficiency in performing duties as a core skill introduction complete copilot per CH-53 NATOPS and appropriate pubs.

b. Crew Requirement. IP/RAC/CC.

c. Ground Training. RACs should complete CH-53 NATOPS closed book examination prior to the flight.

d. Flight Training. (1 Flight, 1.5 Hours).

REV-190 1.5 C,R,H 1 CH-53

Goal. Review core skill introduction training.

Requirement
Practice:
- All FAM stage maneuvers.
- Instrument stage maneuvers.
- Confined area landings.
- External cargo procedures.
- If possible, formation flight.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual. RAC is responsible for all emergency procedures in the NATOPS Manual.

Prerequisite. N/A.

Ordnance. N/A.

External Syllabus Support. N/A.

9. Core Skill Introduction Check (CSIX)

a. Purpose. To demonstrate proficiency in performing the duties as a core skill introduction copilot per CH-53 NATOPS and appropriate pubs.

b. General

(1) The RAC is responsible for all maneuvers and emergency procedures in the Core Skill Introduction phase.

(2) A CH-53 NATOPS qualified instructor shall evaluate this flight.

c. Crew Requirement. IP/RAC/CC.

d. Ground Training. Per the CH-53 NATOPS Flight Manual and OPNAVINST 3710.7, all RACs shall successfully complete an open and closed book test prior to CSIX. Upon completion of this flight, the RAC will be CH-53 NATOPS qualified in model as a Helicopter 2nd Pilot (H2P).

e. Flight Training. (1 Flight, 2.0 Hours).

CSIX-191	2.0	C,R,H	E	1	CH-53

Goal. Evaluate systems knowledge of the CH-53 and the capability to perform maneuvers in the Core Skill Introduction phase, including high AOB maneuvers.

Requirement
Practice:
- Evaluate systems knowledge of the CH-53 to include external lift systems.
- Brief and demonstrate proficiency of all aircraft emergency procedures per the CH-53 NATOPS Flight Manual.
- Demonstrate proficiency and the capability to perform in the Core Skill Introduction to include takeoffs, approaches, instrument procedures, emergency procedures, CALs, high AOB maneuvers, and landings.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisite. Open and Closed book NATOPS exams.

Ordnance. N/A.

External Syllabus Support. N/A.

132. CORE SKILL BASIC. Pilots undergoing instruction in this level must have completed the MAWTS-1 Course Catalog Academic Support Package lectures applicable to this phase of training prior to conducting night systems flights. Night Systems rules of conduct will be per T&R Program Manual. Pilots shall fly all night systems events in this level under ambient light conditions of .0022 LUX or greater except FCLP-273. A PUI is NSQ HLL (qualified to transport troops in HLL conditions) when the following flights have been completed: FORM-211, CAL-222, CAL-223, *CAL-224 (*ONLY REQUIRED TO CARRY TROOPS WHILE UTILIZING ANVIS HUD) TERF-232, TERF-233, and TAC-291. An NSI is required for all initial qualification for the following events: FORM-211, CAL-222, CAL-223, CAL-224, TERF-232, TERF-233, EXT-242, EXT-243, FCLP-273, and TAC-291. Re-qualification may be obtained by flying the R coded events with an NSI.

1. Familiarization/Instruments (FAM)

a. Purpose. To review day and night familiarization maneuvers, navigation procedures, and basic instrument procedures.

b. General

(1) Pilots will find familiarization maneuver descriptions in the NATOPS Manual.

(2) The NATOPS Instrument Flight Manual defines basic instrument procedures. All instrument stage flights should terminate with an instrument approach when possible.

c. Crew Requirement. P/P/CC.

d. Simulator Training. (1 Period, 1.5 Hours).

e. Flight Training. (1 Flight, 1.5 Hours).

SFAM/HNVS/INST-200 1.5 C,R,H S NS

Goal. Review the operational capabilities of the HNVS, NVD, HUD, and instrument systems in the CH-53E.

Requirement
Conduct:
Precision and non-precision approaches.
Fly a preplanned route utilizing the HNVS and HUD for landing zone identification, navigation, and hazard detection.
Practice HNVS and HUD operation, symbology, image optimization and crew coordination.

Performance Standards. IAW Instrument NATOPS/Flight procedures and MAWTS-1 NVD Manual.

Prerequisite. Completion of NITE Lab.

Ordnance. N/A.

External Syllabus Support. WST/APT.

FAM/INST-201 1.5 C 1 CH-53 A/S (N)

Goal. Practice day and night FAM maneuvers, navigation above 200' AGL, and basic instrument procedures.

Requirement
Review:
Basic airwork.
Instrument procedures.
PFPS planning.

Discuss:
FAM maneuvers.

Conduct:
Fly an instrument route. Include turn patterns, vertical S-1 patterns, Oscar patterns, and partial panel flight. Include non-precision approaches, precision approaches, and filing procedures as appropriate. If flown at night, discuss night lighting and use, night scan, and fixation.

Performance Standards. IAW NATOPS/Instrument flight manuals.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. None.

2. Formation (FORM)

a. Purpose. To review formation and introduce tactical formation maneuvering.

b. General

(1) Pilots may find a description of these maneuvers and formations in CH-53 TAC Manual, the MAWTS-1 Academic Support Package and the MAWTS-1 DM Guide.

(2) Read paragraph 132.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Review tactical formation flight in CH-53 TAC Manual.

e. Flight Training. (2 Flights, 3.5 Hours).

FORM-210 1.5 C 2 CH-53

Goal. Practice day formation and introduce tactical formation maneuvering.

Requirement
Discuss:
- CRM.
- Comfort level.
- Closure rates.
- Formation maneuvers.
- Cruise Turn principles.
- Recovery from unusual attitudes.
- High density altitude.
- High AOB turns/aerodynamics performance.
- Lead changes; include EMCON lead change.

Introduce:
- Break turns, center turns, pinch/dig, cover, tac turns, in-place turns, split turns, and cross turns.
- Combat spread and combat cruise formations.

Review:
- Parade position.
- Cruise principles.
- Crossovers.
- Lead changes.

Performance Standards. IAW CH-53 TAC Manual.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. N/A.

FORM-211 2.0 C 2 CH-53 NS

Goal. Practice night system formation flight and navigation.

Requirement
Discuss:
- Aircraft lighting.
- Night tactical formation.
- Closure rate.
- Recovery from unusual attitudes.
- CRM.
- Comfort level.
- NVD emergencies.
- Inadvertent IMC.
- Dead reckoning techniques.
- Low level hazards.
- N-PFPS Mission Planning.
- HNVS considerations.

Introduce:
- NS formation flight.
- NS navigation to include GPS and HNVS checkpoint identification.

Review:
Combat Spread/Combat Cruise Formation principles.

Conduct:
Navigate to a minimum of six predetermined man made or terrain features while using 1:250,000 and 1:50,000 scale maps. Minimum altitude 200 feet AGL. Conduct at least one lead change.

Performance Standards. IAW CH-53 TAC Manual and MAWTS-1 NVD Manual.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. None.

3. Confined Area Landings (CAL)

a. Purpose. To conduct takeoffs and landings in confined/mountainous areas.

b. General. Read paragraph 132.

c. Crew Requirement. CAL-220,221: P/P/CC.
CAL-222,223,224: P/P/CC/AO.

d. Flight Training. (5 Flights, 8.0 Hours).

CAL-220 1.5 C 1 CH-53

Goal. Practice CAL approaches and introduce tactical approaches to confined areas/mountainous terrain. Introduce simulated high gross weight conditions.

Requirement
Discuss:
CRM.
Power settling.
Settling with power.
Low altitude emergencies.
Engine emergencies.
Obstacle clearance.
High gross weight takeoffs/landings.
Maneuvering at high gross weight/density altitude (GW/DA).
High AOB turns/aerodynamic performance.
HNVS capabilities and limitations.
LZ Diagram requirements.

Introduce:
LZ Diagrams.
CAL/MAL approaches.
HNVS operation.

Performance Standards. Fly CAL/MAL pattern at 300'/80 kts. Land within pre-designated area of zone. Recognize glide slope closure rate. Maintain safe obstacle clearance.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. None.

CAL-221 1.5 C,R,H 2 CH-53

Goal. Introduce section CALs.

Requirement
Discuss:
- CRM.
- Obstacle clearance.
- Lead changes.
- Tactical formations.
- Reduced visibility section landings.
- Cruise turn principles (radius of turn).

Introduce:
- Section takeoffs, approaches, landings, emphasizing CALs/MALs.
- Perform a minimum of four landings as lead and four landings as wingman.
- Utilize cruise turn principles for turns into/away from wingman.

Review:
- CAL 220 and FORM-210.
- LZ diagrams.

Performance Standards. IAW CH-53 TAC Manual. Fly CAL/MAL pattern at 300'/80 kts. Land within briefed vicinity of lead aircraft.

Prerequisite. CAL-220 and FORM-210.

Ordnance. N/A.

External Syllabus Support. None.

CAL-222 1.5 C 1 CH-53 NS

Goal. Introduce CALs/MALs utilizing NVDs, emphasizing low work.

Requirement
Discuss:
- CRM.
- Landing zone Lighting.
- Cockpit lighting.
- Low altitude emergencies.

NVD failures.
Inadvertent IMC procedures.
Landings with reduced visibility.
Wave-offs.
HNVS capabilities and limitations.
Electro-Optic Tactical Decision Aid (EOTDA Data).
Solar Lunar Almanac Program.

Introduce:
NVD CALs/MALs (minimum of five).

Review:
Low work.
HNVS operations.
CAL-220.

Performance Standards. Same as CAL-220.

Prerequisite. CAL-220.

Ordnance. N/A.

External Syllabus Support. None.

CAL-223 2.0 C,R,H 2 CH-53 NS

Goal. Introduce NVD section CALs.

Requirement
Discuss:
Same as CAL-222.
Lead changes.
Tactical formations.
Reduced visibility section landings.
Cruise turn principles (radius of turn).

Introduce:
Section takeoffs, approaches, landings, using NVDs.
Conduct at least one lead change.
Perform a minimum of four landings as lead and four landings as wingman.
Utilize cruise turn principles for turns into/away from wingman.

Review:
Form-211.
LZ diagrams.

Performance Standards. Same as CAL-221.

Prerequisite. CAL-221, CAL-222, and FORM-211.

Ordnance. N/A.

External Syllabus Support. None.

CAL-224 1.5 C,R,H 1 CH-53 NS

Goal. Introduce ANVIS-7 (HUD) and develop proficiency with CH-53 night systems to include HNVS and NVDs.

Requirement
Discuss:
- CRM utilizing night systems.
- ANVIS-7 Heads-Up Display.
- Operation.
- Limitations.
- Switchology.
- Functionality/Image.
- HNVS.

Introduce:
- ANVIS-7 (HUD).
- NVD Low Work with HUD.
- NVD Pattern work with HUD.

Review:
- Low work.
- Pattern work CAL/MAL.
- CAL-222.

Performance Standards. IAW MAWTS-1 NVD Manual. Same as CAL-222.

Prerequisite. CAL-222.

Ordnance. N/A.

External Syllabus Support. None.

4. Terrain Flight (TERF)

a. Purpose. To conduct TERF maneuvers/navigation and introduce section maneuvering in the day and night TERF environment.

b. General

(1) A TERF Instructor (TERFI) is required for all day TERF instructional flights and an NSI is required for all initial and re-qualification NVD TERF instructional flights. TERF rules of conduct per T&R Program Manual.

(2) Read paragraph 132.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Completion of MAWTS-1 Course Catalog Academic Support Package TERF lectures prior to commencing this stage of training.

e. Flight Training. (4 Flights, 7.0 Hours).

TERF-230 1.5 C 1 CH-53

Goal. Review TERF maneuvers and navigation.

Requirement
Discuss:
- TERF maneuvers.
- Operational power checks.
- Comfort levels.
- CRM.
- Common terminology.
- Route and checkpoint selection.
- Route planning tools (N-PFPS).
- Orientation techniques.
- Map Preparation.
- Maneuvering at low altitude and high gross weight/high density altitude.
- High AOB turns/aerodynamic performance.
- Low altitude emergencies.
- Aircraft performance charts.
- Obstacle clearance.

Review:
- Masking/unmasking.
- Quick stop.
- TERF turn and roll.
- Bunts.
- Low level and contour profiles.

Conduct:
- Plan and fly a route to a minimum of six checkpoints at or below 200’ AGL.
- TERF navigation utilizing 1:250,000 and 1:50,000 scale maps as appropriate.
- TERF maneuvers.

Performance Standards. Navigate and remain oriented within 500 meters enroute. Navigate and remain oriented within 200 meters of intended point of landing.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. None.

TERF-231 1.5 C,R,H 2 CH-53

Goal. Introduce tactical formation TERF.

Requirement
Discuss:
- Same items as in TERF-230, as it applies to section TERF concepts.
- Tactical flight considerations IAW CH-53 TAC Manual.

Tactical formation maneuvers in a TERF environment IAW CH-53 TAC Manual.

Review:
Same as TERF-230 and FORM-210.

Conduct:
Plan and fly a route to a minimum of six checkpoints at or below 200' AGL.
Incorporate tactical formation maneuvering in the navigation of the route.

Performance Standards. Navigate and remain oriented within 500 meters enroute. Navigate and remain oriented within 200 meters of intended point of landing.

Prerequisite. TERF-230 and FORM-210.

Ordnance. N/A.

External Syllabus Support. None.

TERF-232 2.0 C 1 CH-53 NS

Goal. Introduce TERF navigation while using NVDs.

Requirement
Discuss:
CRM.
Comfort level.
TERF navigation considerations while using NVDs.
Map preparation and route cards.
HNVS capabilities and limitations.

Introduce:
TERF navigation flight while using NVDs.

Review:
NVD CALs and TERF-230.
HNVS operations.

Conduct:
Plan and fly a route to a minimum of six checkpoints at or below 200' AGL.
Route minimum of 75 nm.
Perform a minimum of five landings.

Performance Standards. Navigate and remain oriented within 500 meters enroute. Navigate and remain oriented within 200 meters of intended point of landing.

Prerequisite. CAL-222 and TERF-230.

Ordnance. N/A.

External Syllabus Support. None.

TERF-233 2.0 C,R,H 2 CH-53 NS

Goal. Introduce Section TERF navigation and review section CALs while utilizing NVDs.

Requirement
Discuss:
Same as TERF-232.

Review:
CAL-223.

Conduct:
Plan and fly a route to a minimum of six checkpoints at or below 200' AGL.
Route minimum of 100 nm.
Conduct a minimum of one lead change.
Perform a minimum of three landings as lead and three as wingman.
Use both 1:250,000 and 1:50,000 maps.

Performance Standards. Navigate and remain oriented within 500 meters enroute. Navigate and remain oriented within 200 meters of intended point of landing.

Prerequisite. CAL-223 and TERF-232.

Ordnance. N/A.

External Syllabus Support. None.

5. External Loads (EXT)

a. Purpose. To develop skills necessary for external loads in confined areas and operating the aircraft near its maximum gross weight for the given ambient conditions.

b. General

(1) Review operational and safety considerations discussed in the appropriate NATOPS Flight Manual and MCRP 4-23E, Multi-Service Helicopter Sling Load Manual, External Air Transport Message. Heavy lift should be emphasized, i.e., operating the aircraft at or near its maximum gross weight for the given ambient conditions. EXT-240 shall be dual point for initial qualification (CH-53E). Re-qualification and subsequent flights may be either single or dual point.

(2) Read paragraph 132.

(3) EXT-242 and EXT-243 require an NSI for initial qualification and re-qualification unless both pilots are NSQ HLL and the HAC is EXT-242 and EXT-243 proficient. Conduct initial flight in HLL conditions.

c. Crew Requirement. P/P/CC/AO.

d. External Syllabus Support. HST.

e. Flight Training. (4 Flights, 6.0 Hours).

EXT-240 1.5 C,H 1 CH-53

Goal. Practice single point external lift procedures and introduce precision approach techniques for conducting external operations to a confined area.

Requirement
Discuss:
- CRM.
- Comfort level.
- Preflight planning to include power computations, weight and balance considerations, and operational power checks.
- External load information/characteristics.
- Hook preflight/Hook checks.
- Fuel Dump procedures/Aux tank jettison.
- Form F.
- Power settling.
- Engine failure.
- Cargo jettison procedures.
- Inadvertent hook release.
- Pilot Induced Oscillations (PIO).
- HST operation and safety brief.
- Wave-off with the load.
- Reduced visibility conditions.
- Precision approach techniques.

Introduce:
- Single point external operations to a confined area.

Review:
- External lift procedures.
- In-flight weight and power computations.

Conduct:
- Five single point pickups and deliveries.

Performance Standards. Pickups and delivery performed within 10 meters of intended point of landing.

Prerequisite. CAL-220.

Ordnance. N/A.

External Syllabus Support. HST, single point loads.

EXT-241 1.5 C,R,H 1 CH-53

Goal. Practice dual point external lift procedures (53E) and introduce precision approach techniques for conducting external operations to a confined area.

Requirement
Discuss:
Same as EXT-240.

Introduce:
Dual point external operations to a confined area.

Review:
External lift procedures.
In-flight weight and power computations.

Conduct:
Five dual point pickups and deliveries.

Performance Standards
Pickups and deliveries performed within 10 meters of intended point of landing.

Prerequisite. CAL-220.

Ordnance. N/A.

External Syllabus Support. HST, dual point load.

EXT-242 1.5 C 1 CH-53 NS

Goal. Introduce NS single point externals to a confined area.

Requirement
Discuss:
CRM.
Comfort level.
Low altitude emergencies.
NVD failures.
Inadvertent IMC procedures.
Reduced visibility zones.
LZ lighting.
Pendant and load lighting.
Wave-offs.
Night external operation considerations.
HST operation and safety brief.
Aircraft characteristics when operating at or near MGW.
Precision approach techniques.

Introduce:
NVD single point externals to a confined area.

Review:
EXT-240 discussion items.

Conduct:
Five single point pickups and deliveries.

Performance Standards. Pickups and deliveries performed within 10 meters of intended point of landing.

Prerequisite. CAL-222 and EXT-240.

Ordnance. N/A.

External Syllabus Support. HST, single point load.

EXT-243 1.5 C,R,H 1 CH-53 NS

Goal. Introduce NS dual point externals (53E) to a confined area.

Requirement
Discuss:
Same as EXT-241.

Introduce:
NVD dual point externals to a confined area.

Review:
EXT-241.

Conduct:
Five dual point pickups and deliveries.

Performance Standards. Pickups and deliveries performed within 10 meters of intended point of landing.

Prerequisite. CAL-222 and EXT-241.

Ordnance. N/A.

External Syllabus Support. HST, dual point load.

6. Defensive Measures (DM)

a. Purpose. To introduce skills for evading both enemy surface and air threats, incorporating EW/IR countermeasures in a low-to-medium threat environment.

b. General. Pilots shall conduct this stage in a simulator against ground-to-air and air-to-air threats. The use of an APR-39 trainer will prepare aircrew prior to the event. Pilots should use the threat simulators in conjunction with classroom instruction.

c. Crew Requirement. P/P.

d. Ground Training

(1) Pilots shall complete the MAWTS-1 academic syllabus for DM, as specified in the MAWTS-1 Course Catalog, prior to commencing the flight phase.

(2) Review applicable chapters of CH-53 TAC Manual for EW/IR countermeasures, ASE, and tactical formation maneuvering. Consult the AFTTP 3-1 for threat systems information.

e. Simulator Training. (1 Period, 1.5 Hours).

SDM-250 1.5 C,R,H S (NS)

Goal. Introduce the APR-39 Radar Warning System, AAR-47, ALE-39 operation and programming, and EW/IR countermeasures against AAA, IR and RADAR SAMs.

Requirement
Discuss:
Operations of the ALE-39, APR-39, ALQ-157, and AAR-47.
The strengths and weaknesses of each ASE system versus ground-to-air and air-to-air threats.
CRM.
Different tactical EW/IR countermeasures (Mk-46, MJU-8 and MJU-27B flares; RR-129 and RR-144 chaff).
Tactical maneuvering to counter the threat.

Introduce:
Search, acquisition, track, and missile alert signals of all applicable threat systems on APR-39 and AAR-47.
Tactical maneuvering and ASE employment to counter the threat.

Performance Standards. IAW CH-53 TAC Manual.

Prerequisite. MAWTS-1 DM class.

Ordnance. N/A.

External Syllabus Support. WST/APT with APR-39, ALE-39 and AAR-47 installed.

7. Aerial Refueling (AR) (CH-53E)

a. Purpose. To introduce AR.

b. General. Discuss and become thoroughly familiar with all AR procedures and aspects of CRM as described in the CH-53E NATOPS Manual and the NATOPS Air Refueling Manual (NAVAIR 00-8-T-110).

c. Crew Requirement. P/P.

d. Ground Training. Pilots shall consult the MAWTS-1 Course Catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight, in addition to the MAWTS-1 NVD Manual and CH-53 TAC Manual.

e. Simulator Training. (1 Period, 1.0 Hour).

SAR-260 1.0 C,R,H S (NS)

Goal. To introduce aerial refueling.

Requirement
Discuss:
- CRM.
- Comfort level.
- Rendezvous procedures, both VMC and IMC.
- Voice procedures
- Join-up procedures.
- Airspeeds/altitudes.
- Crossovers.
- Hose response/markings.
- Inadvertent disconnects.
- AR emergencies.
- Control inputs and tip path awareness.
- Blade stall.
- NATOPS AR envelope chart.

Introduce/Practice:
- Rendezvous/join-up.
- Observation/pre-contact/contact/refuel/disconnect positions.
- Aircraft movement around the tanker.
- Post AR procedures.

Performance Standards. Demonstrate the ability to perform a successful join-up and movement to the observation position. Movement to a stable pre-contact, refueling and disconnect position.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. WST/APT.

8. Field Carrier Landing Practice (FCLP)

a. Purpose. To prepare for day, night and NVD carrier landings.

b. General. Discuss and become familiar with all aspects of shipboard operations and CRM applicable to the carrier qualification stage as described in the appropriate CH-53 NATOPS flight manual, NWP-42, LHA/LHD NATOPS, and OPNAVINST 3710.7. Each flight requires a minimum of five takeoffs and landings, additional takeoffs and landings as required to demonstrate proficiency. FCLP-273 requires a designated NSI unless both pilots are NSQ HLL or NSQ LLL as appropriate for the ambient conditions.

c. Crew Requirement. FCLP-271: P/P/CC.
FCLP-272, 273: P/P/CC/AO.

d. Ground Training. Review shipboard operations and CQ procedures contained in the appropriate NATOPS Flight Manual, NWP-42, LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7 prior to commencing this stage of training.

e. Simulator Training. (1 Period, 1.0 Hour).

f. Flight Training. (3 Flights, 3.0 Hours).

SCQ-270 1.0 C,H S N NS

Goal. Conduct day, night and NVD simulated shipboard flight operations.

Requirement
Discuss:
- CRM.
- Terminology.
- Shipboard day and night landing patterns.
- Shipboard instrument procedure.
- Shipboard emergency procedures.
- Blade/pylon fold procedures.

Introduce:
- The LHA, LHD, and LPD day and night VFR landing patterns.
- Fly one TACAN and one CCA approach in IMC or night conditions.

Performance Standards. Conduct all communications with HDC and Tower. Execute proper cockpit switchology. Remain oriented around the landing pattern relative to the BRC.

Prerequisite. Shipboard qualification lecture.

Ordnance. N/A.

External Syllabus Support. WST/APT with ARG shipping program.

9. Aerial Gunnery (AG)

a. Purpose. To introduce and conduct day AG employment.

b. General. Discuss and become familiar with all aspects of AG as described in the MAWTS-1 Aerial Gunnery Manual, ASP Fundamentals of AG, the CH-53 TAC Manual, and appropriate NATOPS flight manual.

c. Crew Training. P/P/CC/AGO(AGUI, AGI).

d. Ground Training. None.

e. Flight Training. (1 Flight, 1.5 Hours).

AG-280 2.0 C,R,H 1 CH-53

Goal. Introduce XM-218 day weapons employment.

Requirement
Discuss:
- XM-218 nomenclature, capabilities and limitations.
- Types of ammunition and ballistic effects.
- Safety considerations, malfunction procedures, jams, and hung ordnance procedures.
- Range procedures and course rules.

Weapons conditions, fire control voice commands, and fire discipline.
Range estimation and target engagement procedures.
Discuss flight profiles and weapons engagement per the TAC manual.

Introduce:
Ordnance loading, weapons preflight and operations, and post-flight.
Implementation of fire control voice commands, and fire discipline.
Range estimation and target engagement.
Flight profiles and weapons engagement per the TAC Manual.

Performance Standards. Demonstrate effective fire control voice commands and fire discipline. Maintain briefed flight profiles IAW TAC Manual. Demonstrate appropriate target engagement IAW TAC Manual.

Prerequisite. Read MAWTS-1 Aerial Gunnery Manual, CH-53 TAC Manual, ASP, Fundamentals of AG and appropriate NATOPS flight manual.

Ordnance. 2 XM-218s and .50 Cal ammo.

External Syllabus Support. AG range.

10. Tactics (TAC)

a. Purpose. To plan, brief, execute and debrief a tactical mission in a low threat environment.

b. General

(1) The PUI will assist in the planning, briefing, and debriefing of each flight. Pilots shall conduct this flight IAW the standards required in MCO 3501.4, MCCRE, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations, and the CH-53 TAC Manual. TAC-291 requires an NSI for initial instruction. TAC-291 will be flown under HLL conditions.

(2) TAC sorties will be flown with static XM-218s whenever practical.

(3) Read paragraph 132.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Consult the MAWTS-1 Course Catalog for the recommended Academic Support Package lectures applicable to this stage of training.

e. Flight Training. (2 Flights, 4.0 Hours).

TAC-290 2.0 C 2 CH-53

Goal. Introduce assault support tactical procedures in a low threat environment, using MCCRE standards as a reference for mission planning.

Requirement
Discuss:
- CRM.
- Planning based on METT-TSL.
- Route planning.
- Objective area planning.
- Air and ground unit coordination.
- Defensive measures.
- TACC/DASC or TACC/HDC procedures.
- Emissions control (EMCON).

Introduce:
- Tactical mission planning, briefing, execution, and debriefing in support of assigned tasks.
- Route planning and escort tactics.
- Objective area planning.
- DASC/HDC control.
- EMCON conditions.

Conduct:
- Route minimum of 125 nm.
- Minimum of one EMCON lead change.
- Perform a minimum of three landings as lead and three landings as wingman.
- Use 1:250,000 and 1:50,000 maps as appropriate.

Performance Standards. Remain oriented within 300 meters and arrive in the objective area within ± 1 minute of L-Hour.

Prerequisite. TERF-231.

Ordnance. 2 XM-218s, and notional .50 Cal rounds.

External Syllabus Support. None.

TAC-291 2.0 C 2 CH-53 NS

Goal. Introduce assault support tactical procedures in a low threat environment at night, using MCCRE standards as a reference for mission planning.

Requirement
Discuss:
- Items per TAC-290.
- Night systems planning considerations.
- HNVS and HUD capabilities and limitations.

Review:
- TAC-290.
- HNVS and HUD operations.

Conduct: Same as TAC-290.

Performance Standards. Remain oriented within 300 meters and arrive in the landing zone within ± 1 minute of L-Hour.

Prerequisite. TERF-233.

Ordnance. 2 XM-218s, and notional .50 Cal rounds.

External Syllabus Support. None.

133. CORE SKILL ADVANCED. Pilots undergoing instruction in this phase must have completed the MAWTS-1 Course Catalog Academic Support Package lectures applicable to this phase of training prior to conducting night systems flights. Night Systems rules of conduct will be per T&R Program Manual; i.e., the PUI may begin the LLL syllabus when designated NSQ HLL. A PUI is NSQ LLL (qualified to transport troops in all light level conditions) at the completion of the following flights: CAL-320, CAL-321, *CAL-322 (*ONLY REQUIRED TO CARRY TROOPS WHILE UTILIZING ANVIS HUD), TERF-330, TERF-331, and TAC-391. Pilots shall fly the above listed flights and EXT-342 under ambient light conditions of less than .0022 LUX. An NSI is required for initial qualification and re-qualification for the following events: CAL-320, CAL-321, CAL-322, TERF-330, TERF-331, EXT-342, EXT-343 and TAC-391. EXT-343 may be flown in HLL conditions without an NSI if both pilots are NSQ HLL and EXT-241 (or EXT-242 if conducting Dual point external) proficient. EXT-343 may be flown in LLL conditions without an NSI if both pilots are NSQ LLL and EXT-341 and EXT-342 proficient. Pilots may fly all other night systems flights in this level under HLL or LLL conditions.

1. Confined Area Landings (CAL)

a. Purpose. To conduct CALs in low LLL (below .0022 LUX).

b. General

(1) Refer to the appropriate CH-53 NATOPS Flight Manual, NWP 3-22.5-CH53 TAC Manual, and MAWTS-1 NVD Manual for various LZ lighting configurations. This stage of instruction requires an NSI for initial qualification and all re-qualification.

(2) Read paragraph 133.

c. Crew Requirement. P/P/CC/AO.

d. Prerequisite. PUI must be NSQ HLL.

e. Flight Training. (3 Flights, 5.0 Hours).

CAL-320 1.5 C 1 CH-53 NS

Goal. Perform NVD low work and CALs/MALs during low light level conditions.

Requirement
Discuss:
- CRM.
- Comfort level.
- Low altitude emergencies.
- NVD emergencies.
- Inadvertent IMC.
- Low light level planning considerations.

Introduce:
- LLL CALs.
- Low work.

Review:
- CAL-222 discussion items.
- Low work.
- HNVS operations.

Performance Standards. Perform a minimum of five landings. Same as CAL-222.

Prerequisite. NSQ HLL.

Ordnance. N/A.

External Syllabus Support. None.

CAL-321 2.0 C,R,H 2 CH-53 NS

Goal. Develop proficiency in section CALs during low light level conditions.

Requirement
Discuss:
- Same as CAL-223.
- Closure rates.
- Visual illusions.

Introduce:
- Section CALs/MALs under low light level conditions.
- Conduct at least one lead change.
- Perform a minimum of four landings as lead and four as wingman.

Review:
- NVD formation flight, section CALs, and navigation.

Performance Standards. Same as CAL-223.

Prerequisite. CAL-320.

Ordnance. N/A.

External Syllabus Support. None.

CAL-322 1.5 C,R,H 1 CH-53 NS

Goal. Develop proficiency with CH-53 night systems in the low light level environment to include HNVS, NVDs and ANVIS-7 HUD.

Requirement
Discuss:
Review CAL-224 under low light conditions.

Introduce:
Review CAL-224 under low light conditions.

Review:
CAL-224 under low light conditions.

Performance Standards. IAW MAWTS-1 NVD Manual. Perform LLL low work with HUD. Perform LLL CALS with HUD.

Prerequisite. CAL-320.

Ordnance. N/A.

External Syllabus Support. None.

2. Terrain Flight (TERF)

a. Purpose. To develop proficiency in tactical TERF navigation and flight skills in the low level and contour flight profiles under low light level conditions.

b. General

(1) All night TERF instructional flights require a designated NSI. TERF rules of conduct are per T&R Program Manual.

(2) Read paragraph 133.

c. Crew Requirement. P/P/CC/AO.

d. Ground academic training. Review appropriate chapters of CH-53 TAC Manual and MAWTS-1 NVD Manual.

e. Flight Training. (2 Flights, 3.5 Hours).

TERF-330 1.5 C 1 CH-53 NS

Goal. Develop proficiency in tactical NVD navigation during LLL conditions.

Requirement
Discuss:
LLL planning considerations.
CRM.
Comfort level.
Obstacle recognition and clearance.

Closure rates.
Visual illusions.
HNVS capabilities and limitations.

Review:
LLL NVD CALs.
HNVS operations.

Conduct:
Route to be a minimum of 75 nm.
Perform landings until demonstrated proficiency, minimum of five landings.
Use 1:250,000 or 1:50,000 maps, as appropriate.

Performance Standards. Navigate and remain oriented within 500 meters enroute. Navigate and remain oriented within 200 meters of intended point of landing.

Prerequisite. CAL-320.

Ordnance. N/A.

External Syllabus Support. None.

TERF-331 2.0 C,R,H 2 CH-53 NS

Goal. Introduce tactical NVD formation flight and navigation during LLL conditions.

Requirement
Discuss:
LLL planning considerations.
CRM.
Comfort level.
Obstacle recognition and clearance.
Closure rates.
Visual illusions.
Formation flight discipline.

Review:
Same as CAL-321.

Conduct:
Route to be a minimum of 100 nm.
Perform a minimum of one lead change.
Perform a minimum of three landings as lead and three as wingman.
Use 1:250,000 or 1:50,000 maps, as appropriate.

Performance Standards. Navigate and remain oriented within 500 meters of the route. Navigate and remain oriented within 200 meters of intended point of landing.

Prerequisite. CAL-321 and TERF-330.

Ordnance. N/A.

External Syllabus Support. None.

3. External Loads (EXT)

a. Purpose. To review operational and safety considerations discussed in the appropriate NATOPS Flight Manual and MCRP 4-23E, Multi-Service Helicopter Sling Load Manual, External Air Transport Message. Heavy lift should be emphasized, i.e., operating the aircraft at or near its maximum gross weight for the given ambient conditions. Re-qualification and subsequent flights can be single or dual point. Develop proficiency with heavy lift external loads from confined areas in the TERF environment.

b. General

(1) Each pilot should practice externals with heavy FMF equipment.

(2) TERFI required for initial qualification and re-qualification of EXT-341.

(3) Pilots may transport loads either single or dual point, as appropriate.

(4) Read paragraph 133.

c. Crew Requirement. P/P/CC/AO.

d. Flight Training. (4 Flights, 6.5 Hours).

EXT-340	1.5	C,H 1 CH-53

Goal. Practice heavy external lift procedures.

Requirement
Discuss:
- CRM.
- Comfort level.
- HST operation/safety brief.
- Low altitude emergencies.
- Effects of wind.
- Effects of high density altitude.
- Preflight planning, including power computations, weight and balance considerations, and operational power checks.
- Effects of high AOB turns.
- Cargo jettison procedures.
- PIO/PAO.
- Load handling characteristics.
- Power Settling/Settling with Power.

Introduce:
- Techniques for heavy lift of FMF equipment.

Conduct:
- Use appropriate heavy lift substitute if FMF equipment is not available.

Performance Standards. IAW with CH-53 TAC Manual. Operate in conditions approaching maximum aircraft performance within the boundaries of existing safety considerations.

Prerequisite. EXT-240 or EXT-241.

Ordnance. N/A.

External Syllabus Support. HST, single or dual point load.

EXT-341 1.5 C,R,H 1 CH-53

Goal. Introduce external flight in the TERF profile.

Requirement
Discuss:
- CRM.
- Comfort level.
- Preflight planning, including power computations, weight and balance considerations, and operational power checks.
- Power settling/settling with power.
- Low altitude emergencies.
- Cargo jettison procedures.
- PIO/PAO.
- HST operation/safety brief.
- Wave-offs.
- Reduced visibility conditions.
- Terrain/obstacle clearance.
- Route planning considerations.

Introduce:
- TERF externals.

Review:
- Single and/or dual point procedures.
- TERF maneuvers.

Conduct:
- Minimum of one pickup and delivery required.

Performance Standards. IAW with CH-53 TAC Manual.

Prerequisite. TERF-230 and EXT-240 or EXT-241.

Ordnance. N/A.

External Syllabus Support. HST, single or dual point load.

EXT-342 1.5 C,R,H 1 CH-53 NS

Goal. Introduce LLL NVD externals, dual point preferred.

Requirement
Discuss:
- Same as EXT-242 and EXT-243.

Loss of visual reference.

Introduce:
LLL NVD externals.

Review:
EXT-241 and EXT-242.

Performance Standards. Minimum of three pickups and deliveries required. Pickups and drop-offs performed within 5 meters of intended point of landing.

Prerequisite. EXT-242 or EXT-243 and CAL-320.

Ordnance. N/A.

External Syllabus Support. HST, single or dual point load.

EXT-343 2.0 C,R,H 1 CH-53 NS

Goal. Introduce NVD external flight in the TERF profiles. Emphasize TERF flight with an external load. EXT-343 may be flown in HLL conditions without an NSI if both pilots are NSQ HLL and EXT-241 (or EXT-242 if conducting Dual point) proficient. EXT-343 may be flown in LLL conditions without an NSI if both pilots are NSQ LLL and EXT-341/EXT-342 proficient.

Requirement
Discuss:
CRM.
Comfort level.
Preflight planning, including power computations, weight and balance considerations, and operational power checks.
Power settling/settling with power.
Low altitude emergencies.
Cargo jettison procedures.
PIO/PAO.
HST operation/safety brief.
Flight envelopes of various loads.
Pendant and load illumination techniques.
NVD emergencies.
Moon angle/shadowing.
Wave-offs.
Reduced visibility conditions.
Terrain/obstacle clearance.

Introduce:
NVD TERF externals in the TERF profile.

Review:
Single and/or Dual point procedures.
TERF maneuvers.

Conduct:
Minimum of one pickup and delivery required.

Performance Standards. IAW with CH-53 TAC Manual.

Prerequisite. EXT-242 or EXT-243 (if HLL), or EXT-342 (if LLL).

Ordnance. N/A.

External Syllabus Support. HST, single or dual point load.

4. Defensive Measures (DM)

a. Purpose. To develop proficiency in acquiring and avoiding enemy surface-to-air threat, using EW/IR countermeasures and defensive measures in a low-to-medium threat environment. Upon completion of this stage, the pilot shall be able to effectively maneuver in a multi-plane flight against low altitude surface-to-air threats.

b. General. Pilots shall conduct this stage against both electromagnetic and IR threats. The utilization of an EW range or emitter with threat systems to include electromagnetic and ground based threat simulation; e.g., smokey SAMs, hand-held pyrotechnics, etc., will greatly enhance aircrew training. Use of the APR-39 and ALE-39 trainer or simulator will aid in preparing aircrew prior to flight. DM-350 requires a DM instructor (DMI) for initial qualification and re-qualification. Pilots undergoing this stage of instruction must be current and proficient in TERF-231. Continued training is not contingent upon completion of SDM-250. However, pilots should use simulators in conjunction with classroom instruction. If DM-350 is to be conducted at night then the DMI must also be an NSI.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training

(1) Pilots shall complete the MAWTS-1 academic syllabus for DM specified in the MAWTS-1 Course Catalog prior to commencing the flight phase.

(2) Review applicable chapters of NWP 3-22.5-CH-53 Tactical Manual for EW/IR countermeasures, ASE, and tactical formation maneuvering. Consult the AFFTP 3-1 for threat systems information.

(3) Complete the DM class per the MAWTS-1 ASP prior to DM-350.

e. Flight Training. (1 Flight, 2.0 Hours).

DM-350 2.0 C,R,H 2 CH-53 (N)(NS)

Goal. Introduce DM procedures and ASE employment against various surface-to-air threats.

Requirement
Discuss:
Operations of the ALE-39, APR-39, ALQ-157, AAR-47, MK-46, MJU-8 and MJU-27B flare; RR-129 and RR-144 chaff.
The strengths and weaknesses of each ASE system versus ground-to-air and air-to-air threats.

CRM.
Section tactics and tactical maneuvering against surface-to-air threat systems.
Use of radar horizon, ground clutter, radar resolution cells, and radar masking techniques.

Introduce:
Various threat signatures concentrating on threat recognition and detection.
SAM evasive maneuvers coordinated with the dispensing of chaff and flares.
Section maneuvering against IR missiles or low altitude radar guided threats on an EW range or with an emitter.

Review:
Section threat avoidance, masking and the use of chaff and flares.

Performance Standards. IAW CH-53 TAC Manual and MAWTS-1 DM class.

Prerequisite. TERF-231 proficient and MAWTS-1 DM class.

Ordnance. 30 chaff and 30 flares.

External Syllabus Support. EW range or emitter with threat systems to include electromagnetic and ground based threat simulation; e.g. smokey SAMS, handheld pyrotechnics etc.

5. Aerial Refueling (AR) (CH-53E)

a. Purpose. To develop proficiency in AR.

b. General

(1) Discuss and become thoroughly familiar with all aspects of CRM as described in the CH-53E NATOPS Manuals and the NATOPS Air Refueling Manual (NAVAIR 00-8-T-110). The PUI must be NSQ HLL current to fly initial AR-362 under HLL conditions; moreover, he must be NSQ LLL current to fly initial AR-362 under LLL conditions. If pilots do not meet these conditions, the ARI shall also be an NSI. After pilots obtain initial currency, both pilots need only to be AR-362 complete and current to conduct NVD AR operations. Successful completion of each flight requires a minimum of three contacts with demonstrated proficiency and movement to the refueling position.

(2) Initial qualification and re-qualification require an ARI.

c. Crew Requirement. AR-360, 361: P/P/CC.
AR-362: P/P/CC/AO.

d. Ground Training. Pilots shall consult the MAWTS-1 Course Catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight, in addition to the MAWTS-1 NVD Manual and CH-53 TAC Manual.

e. Flight Training. (3 Flights, 4.5 Hours).

f.

AR-360 1.5 C,H 1 CH-53E

Goal. Introduce and practice day AR procedures.

Requirement
Discuss:
- CRM.
- Comfort level.
- Rendezvous procedures, both VMC and IMC.
- AR checklist.
- Voice procedures.
- Join-up procedures.
- Multiple receiver flow around the tanker.
- Observation, pre-contact, refueling and disconnect positions.
- KC-130T/J configurations.
- KC-130T/J emergencies.
- Airspeeds/altitudes.
- Crossovers.
- Area of extreme turbulence.
- Hose response/markings.
- Inadvertent disconnects.
- AR emergencies.
- Control inputs and tip path awareness.
- Blade stall.
- NATOPS AR envelope chart.

Demonstrate/Introduce/Practice:
- Rendezvous/join-up.
- Observation/pre-contact/contact/refuel/disconnect positions.
- Aircraft movement around the tanker.
- Post AR procedures.

Performance Standards. Demonstrate the ability to perform a successful join-up and movement to the observation position. Movement to a stable pre-contact, refueling and disconnect position. Conduct a minimum of 5 dry or wet plugs.
Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. 1 KC-130 tanker.

AR-361 1.5 C,R,H 1 CH-53

Goal. Demonstrate proficiency in day AR techniques and procedures.

Requirement
Discuss:
- Same as AR-360 discussion items.

Introduce:
- Refueling from both sides of the tanker if available.

Review:
AR-360.

Performance Standards. Demonstrate the ability to maneuver the aircraft through all 5 positions, perform all voice procedures, and disengage from the tanker. Conduct a minimum of 4 dry and 1 wet plugs.

Prerequisite. AR-360.

Ordnance. N/A.

External Syllabus Support. 1 KC-130 tanker.

AR-362 1.5 C,R,H 1 CH-53 NS

Goal. Introduce and practice night AR techniques and procedures with NVDs.

Requirement. Demonstrate proficiency in HAR while utilizing NVDs in HLL or LLL conditions.

Discuss:
Same as AR-360 discussion items.
NVD/HNVS considerations.
Light Level Planning considerations.
Night movement around tanker.
Multiple receiver conduct at night.
Closure rates.
Depth perception.
Receiver/tanker lighting.
Visual illusions.
Inadvertent IMC.
EMCON visual signals.
NVD emergencies.

Introduce: NVD AR.

Performance Standards. Demonstrate the ability to maneuver the aircraft through all 5 positions, perform all voice procedures, and disengage from the tanker. Conduct a minimum of 4 dry and 1 wet plugs.

Prerequisite. AR-361.

Ordnance. N/A.

External Syllabus Support. KC-130 tanker.

6. Aerial Gunnery (AG)

a. Purpose. To introduce and conduct NVD AG employment.

b. General. Discuss and become familiar with all aspects of AG as described in the MAWTS-1 Aerial Gunnery Manual, ASP Fundamentals of Aerial Gunnery, the CH-53 TAC Manual, and the appropriate NATOPS flight manual.

c. Crew Training. P/P/CC/AGO (AGUI, AGI).

d. Ground Training. AG-380 requires PUI to be NSQ per ambience or with an NSI for all initial and re-qualifications.

e. Flight Training. (1 Flight, 1.5 Hours).

AG-380 1.5 C,R,H 1 CH-53 NS

Goal. Introduce XM-218 night weapons employment using NVDs.

Requirement
Review:
AG-280

Discuss:
Night adaptation and muzzle flash awareness.
Laser operations and safety per the CH-53 TAC Manual.
Employment of the AIM-1 or GCP-2V mounted lasers (if used).

Introduce:
Same as AG-280 in night environment.

Conduct:
Mission and aircrew brief.

Performance Standards. Same as AG-280.

Prerequisite. Read MAWTS-1 Aerial Gunnery Manual, CH53 TAC Manual, ASP, Fundamentals of Aerial Gunnery and appropriate NATOPS flight manual.

Ordnance. 2 XM-218s and .50 CAL ammo.

External Syllabus Support. AG range.

7. Tactics (TAC)

a. Purpose. To conduct missions in a medium threat environment while part of a multiple aircraft flight, using escort aircraft, if available.

b. General

(1) All mission briefs require an intelligence scenario. To the greatest extent possible, incorporate the employment of escort aircraft (fixed or rotary-wing), ALE-39, AAR-47, HNVS and HUD, APR-39, the .50 caliber machine gun, and use of the AR-5/M-24 gas masks. Pilots shall conduct these flights under the standards required in MCO 3501.4A, MCCRES, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8A MCCRES, Volume VII, MAGTF Elements. Pilots shall use the CH-53 TAC Manual as a source document

for planning and developing proficiency in planning, briefing, execution, and debriefing. TAC-391 must be flown under LLL conditions. TAC-391 requires an NSI for initial qualification and re-qualification.

(2) TAC sorties will be flown with static XM-218s whenever practical.

(3) Read paragraph 133.

c. Crew Requirement. P/P/CC/AO.

d. Flight Training. (2 Flights, 4.0 Hours).

TAC-390 2.0 C,R,H 2+ ACFT

Goal. Introduce assault support tactical procedures in a medium threat environment.

Requirement
Discuss:
- CRM.
- Comfort level.
- Flight leadership.
- Utilize METT-TSL in mission planning.
- ITG considerations.
- Route and objective area planning.
- Embark and Debark of Troops and equipment.
- Sectors of fire.
- Escort considerations.
- Fire Support Coordination considerations.
- Air and ground unit coordination.
- Threat systems and counter-tactics, as defined in defensive measures.
- Weapons preflight, control, and employment.
- Command & Control/C^3 relationships EMCON procedures.

Review:
- TERF considerations.
- ASE considerations.
- External/internal movement of cargo, supplies and personnel.
- Defensive measures.

Performance Standards. Remain oriented within 300 meters and arrive in the landing zone within $\pm$ 1 minute of L-Hour. Flight flown using MCCRE standards as a reference for mission planning

Prerequisite. TAC 290.

Ordnance. 2 XM-218 guns with 1000 rounds .50 caliber ammunition, 30 chaff and 30 flares.

External Syllabus Support. Assault Support Escort aircraft if available.

TAC-391 2.0 C,R,H 2+ ACFT NS

Goal. Introduce assault support tactical procedures in a medium threat environment during low light level conditions; use MCCRES standards as a reference for mission planning.

Requirement
Discuss:
Items per TAC-390.
Night systems planning considerations.
Light level planning considerations.
HNVS and HUD capabilities and limitations.
Electro-Optic Tactical Decision Aid (EOTDA Data).
Effects of ordnance delivery on NVDs.

Review:
TAC-390.
HNVS and HUD capabilities and limitations.

Performance Standards. Remain oriented within 300 meters and arrival in the landing zone area within + 1 minute of L-Hour.

Prerequisite. TERF-331.

Ordnance. 2 XM-218 guns with 1000 rounds .50 caliber ammunition, 30 chaff and 30 flares.

External Syllabus Support. Assault Support Escort aircraft if available.

134. CORE SKILL PLUS

1. Helicopter Insertion & Extraction Techniques (HIE)

a. Purpose. To introduce HIE methods required in executing special operations.

b. General. The pilots shall conduct a brief with the supported unit.

c. Crew Requirement. P/P/CC/AO.

d. Prerequisites

(1) Aircrew shall be NSQ HLL or NSQ LLL as required for ambient light conditions and designated NVD troop transport capable to conduct HIE events with NVDs.

(2) Aircrew shall attend brief with appropriate master; e.g. fast rope, rappel, SPIE, and helocast.

(3) FCLP-473 may be flown in HLL conditions without an NSI if both pilots are NSQ HLL and one pilot is FCLP-473 proficient. FCLP-473 may be flown in LLL conditions without an NSI if both pilots are NSQ LLL and one pilot is FCLP-473 proficient.

e. Ground Training. Aerial delivery, fast rope, rappel, SPIE rig, and helocast training lectures from MAWTS-1 Academic Support Package and CH-53 TAC Manual, as appropriate.

f. Flight Training. (3 Flights, 4.5 Hours).

HIE-400 1.5 C,R,H 1 CH-53 (N)(NS)

Goal. Introduce procedures for tactical insertion and/or extraction of a ground force via fast rope, rappelling or SPIE.

Requirement
Discuss:
- CRM.
- Safety precautions.
- Signals/communications with HRST master.
- Training master procedures.
- Rescue Hoist procedures and types of operations.
- Obstacle clearance.
- Precision hover/hover performance.
- Emergency procedures to include NVD emergencies.

Introduce:
- Techniques for inserting personnel by fastrope, rappelling, SPIE.
- Signals/communications with HRST master.
- Precision hover.

Performance Standards. Execute approach and hover within ± 5 ft of intended altitude and within 2 meters of intended spot.

Prerequisite
CAL-220 for day.
CAL-222 for HLL.
CAL-320 for LLL.

Ordnance. N/A

External Syllabus Support. HRST Master and ground safety personnel.

HIE-401 1.5 C,R,H 1 CH-53

Goal. Introduce procedures for tactical insertion of a ground force via helocast.

Requirement
Discuss:
- CRM.
- Safety precautions.
- Training master procedures.
- Signals/communications with jump master.
- Obstacle clearance.
- Precision taxi techniques over water.
- Emergency procedures to include NVD emergencies.

Vertigo and visual illusions.

Introduce:
Techniques for inserting personnel by helocast.
Signals/communications with jump master.
Precision taxi.

Performance Standards. Execute approach/hover within ± 5 ft/± 3 kts of intended altitude and ground speed.

Prerequisite
CAL-220 for day.
CAL-222 for HLL.
CAL-320 for LLL.

Ordnance. N/A.

External Syllabus Support. Jump Master, safety boat and safety personnel.

HIE-402 1.5 C,R,H CH-53 (N)(NS)

Goal. Introduce procedures for tactical insertion via para ops.

Requirement
Discuss:
CRM.
Safety precautions.
Signals/communications with jump master.
Training master procedures.
Obstacle clearance.
Emergency procedures to include NVD emergencies.

Introduce:
Techniques for inserting personnel by para ops.
Signals/communications with jump master.

Performance Standards. Fly within ± 50 ft of designated altitude and ± 5 kts of designated airspeed.

Prerequisite. None.

Ordnance. N/A.

External Syllabus Support. Jump master and ground safety Personnel.

2. Defensive Measures (DM)

a. Purpose. To develop proficiency in evading enemy surface and air threats incorporating ASE in a low-to-medium threat environment. Upon completion of this stage, the pilot will be able to effectively maneuver to evade, in a multi-plane flight, low altitude surface-to-air and air-to-air threats.

b. General. Pilots shall conduct this stage against both electromagnetic and IR threats. The utilization of an EW range or emitter with threat systems to include electromagnetic and ground based threat simulation; e.g. smokey SAMs, hand-held pyrotechnics, etc. will greatly enhance aircrew training. The use of an APR-39 trainer or WST simulator will prepare aircrew prior to flight. DM-350, DM-450 and DM-451 require a DM instructor for initial qualification and re-qualification. Pilots undergoing this stage of instruction must be current and proficient in TERF-231. Continued training is not contingent upon completion of SDM-250. However, pilots should use simulators in conjunction with classroom instruction.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training

(1) Pilots shall complete the MAWTS-1 academic syllabus for DM as specified in the MAWTS-1 Course Catalog prior to commencing the flight phase.

(2) Review applicable chapters of TAC Manual for EW/IR countermeasures, ASE, and tactical formation maneuvering. Consult the AFTTPM 3-1 for threat systems information.

e. Flight Training. (2 Flights, 2.0 Hours).

DM-450 1.0 C,R,H 2 CH-53

Goal. Introduce section DM against a helicopter aggressor.

Requirement
Discuss:

- CRM.
- Lookout doctrine.
- Situational awareness.
- Adversary aircraft parameters.
- Adversary weapons envelopes.
- Mutual support.
- Section tactical maneuvers.

Introduce:

- Section tactical maneuvers in response to a threat helicopter.

Performance Standards. IAW CH-53 TAC Manual and MAWTS-1 DM class.

Prerequisite. TERF-231 proficient and MAWTS-1 DM class.

Ordnance. 60 flares.

External Syllabus Support. 1 helicopter to serve as adversary aircraft, preferably an attack helicopter.

DM-451 1.0 C,R,H 2 CH-53

Goal. Introduce section DM against a fixed wing aggressor.

Requirement
Discuss:
CRM.
Lookout doctrine.
Situational awareness.
Adversary aircraft parameters.
Adversary weapons envelopes.
Mutual support.
Section tactical maneuvers.

Introduce:
Section tactical maneuvers in response to a fixed wing aircraft.

Performance Standards. IAW CH-53 TAC Manual and MAWTS-1 DM class.

Prerequisite. TERF-231 proficient and MAWTS-1 DM class.

Ordnance. 60 flares.

External Syllabus Support. 1 FW aircraft to serve as an aggressor.

3. Nuclear, Biological, and Chemical (NBC)

a. Purpose. To conduct flight operations while wearing NBC protective equipment.

b. General. For the safe execution of initial NBC flights, one pilot and one aircrewman shall remain unmasked.

c. Crew Requirement. P/P/CC.

d. Ground Training

(1) Discuss wearing of the NBC defense suit, mask, hood, gloves and boots. Introduce proper maintenance and serviceability checks on equipment, emphasizing donning of equipment.

(2) Discuss physiological factors of flying with NBC protective equipment.

e. Flight Training. (1 Flight, 1.0 Hour).

NBC-460 1.0 C,R,H 1 CH-53 (N)(NS)

Goal. Introduce flight in a simulated NBC environment.

Requirement
Discuss:
CRM.
Comfort level.
Wearing of NBC equipment in the aircraft.
Distortion of vision.

Communications.
Proper use of NBC defensive equipment.
NVD concerns with NBC equipment.

Introduce:
Taxi, low work, pattern work.
Confined area landings.
Communications.

Performance Standards. Adequately taxi, hover, and fly while wearing NBC gear. Communicate effectively while wearing NBC gear.

Prerequisite
CAL-220 for day.
CAL-222 for HLL.
CAL-320 for LLL.

Ordnance. N/A.

External Syllabus Support. N/A.

4. Field Carrier Landing Practice (FCLP)

a. Purpose. To prepare for day, night and NVD carrier landings.

b. General. Discuss and become familiar with all aspects of shipboard operations and CRM applicable to the carrier qualification stage as described in the appropriate CH-53 NATOPS flight manual, NWP-42, LHA/LHD NATOPS, and OPNAVINST 3710.7. Each flight requires a minimum of five takeoffs and landings, additional takeoffs and landings as required to demonstrate proficiency. FCLP-473 requires a designated NSI unless both pilots are NSQ HLL or NSQ LLL as appropriate for the ambient conditions.

c. Crew Requirement. FCLP-471: P/P/CC.
FCLP-472, 473: P/P/CC/AO.

d. Ground Training. Review shipboard operations and CQ procedures contained in the appropriate NATOPS Flight Manual, NWP-42, LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7 prior to commencing this stage of training.

e. Simulator Training. (1 Period, 1.0 Hour).

g. Flight Training. (3 Flights, 3.0 Hours).

FCLP-471 1.0 C,H,R 1 CH-53

Goal. Conduct day FCLPs.

Requirement
Discuss:
CRM.
Comfort level.
Wind envelopes.
LSE signals.
Deck procedures.

Communication procedures.

Introduce:
Day shipboard landing pattern.
Day shipboard landings.

Review:
Shipboard communications.
Cockpit switchology.
CRM.

Performance Standards. Fly a suitable pattern relative to the BRC in order to arrive over the intended spot in a stable hover. Execute a smooth touchdown within safe limits of the spot.

Prerequisite. Shipboard qualification lecture.

Ordnance. N/A.

External Syllabus Support. Land based simulated ship deck spot.

FCLP-472 1.0 C,H 1 CH-53 N

Goal. Conduct night, unaided FCLPs.

Requirement
Discuss:
CRM.
Comfort level.
Scan techniques.
Aircraft/deck lighting.

Introduce:
Unaided, night shipboard landing pattern.
Unaided, night shipboard landings.

Performance Standards. Successfully incorporate instrument scan techniques required to maintain orientation around the ship at night.

Prerequisite. FCLP-471.

Ordnance. N/A.

External Syllabus Support. Lit, land based, simulated ship deck spot.

FCLP-473 1.0 C,H,R 1 CH-53 N NS

Goal. Conduct NVD FCLPs.

Requirement
Discuss:
CRM.

Comfort level.
Scan techniques.
NVD aircraft/deck lighting.
NVD landing techniques.
NVD emergencies.

Introduce:
NVD shipboard landing pattern.
NVD shipboard landings.

Performance Standards. Successfully incorporate the use of NVDs into the night shipboard environment.

Prerequisite. CAL-222 and FCLP-471.

Ordnance. N/A.

External Syllabus Support. NVD compatible, land based, simulated ship deck spot.

5. Carrier Qualification (CQ)

a. Purpose. To qualify pilots in day, night and NVD flight operations from a helicopter capable ship.

b. General. Discuss and become familiar with all aspects of shipboard operations and CRM applicable to the carrier qualification stage as described in the appropriate NATOPS Flight Manual, NWP-42, LHA/LHD NATOPS, and OPNAVINST 3710.7. Each initial instructional flight requires a minimum of five takeoffs and landings, additional takeoffs and landings as required to demonstrate proficiency.

c. Crew Requirement. CQ-474, 475: P/P/CC.
AO required for CQ-476.

d. Prerequisites. Pilots should complete the appropriate FCLP flight prior to flying the similar CQ flight. CQ-372 requires a designated NSI unless both pilots are NSQ HLL or NSQ LLL for appropriate ambient conditions.

e. Ground Training. Review shipboard operations and CQ procedures as contained in the appropriate NATOPS Flight Manual, NWP-42, LHA/LPH/LHD NATOPS and OPNAVINST 3710.7 prior to commencing this stage.

f. Flight Training. (3 Flights, 4.5 Hours).

CQ-474 1.5 C,H,R 1 CH-53

Goal. Introduce day CQs.

Requirement
Discuss:
CRM.
Comfort level.
Feet wet/landing checklist.
Closure rate.
Wind envelopes.

Aircraft lighting procedures.
Deck markings.
LSE signals.
Voice procedures/Lost communication procedures.
Shipboard landing patterns.
Shipboard holding patterns.
Shipboard instrument patterns.
Shipboard emergencies.
Air space control in the shipboard environment.

Introduce:
Day CQ.

Performance Standards. Same as FCLP-471.

Prerequisite. FCLP-471.

Ordnance. N/A.

External Syllabus Support. Helicopter capable ship.

CQ-475 1.5 C,H 1 CH-53 N

Goal. Conduct night, unaided CQs.

Requirement
Discuss:
CQ-474 discussion items.
Spatial disorientation.
Aircraft/deck lighting.

Introduce:
Unaided night CQs.

Review:
CQ-474.

Performance Standards. Same as FCLP-472.

Prerequisite. FCLP-472 and CQ-474.

Ordnance. N/A

External Syllabus Support. Lit helicopter capable ship.

CQ-476 1.5 C,R,H 1 CH-53 NS

Goal. Conduct NVD CQs.

Requirement
Discuss:
CQ-474 discussion items.
Scan techniques.
NVD aircraft/deck lighting.
NVD landing techniques.

NVD emergencies.

Introduce:
NVD CQs.

Performance Standards. Same as FCLP-473.

Prerequisite. FCLP-473 and CQ-474.

Ordnance. N/A.

External Syllabus Support. NVD compatible helicopter capable ship.

6. Tactics (TAC)

a. Purpose. To conduct practical application exercises using skills developed throughout the syllabus. Pilots shall emphasize the integration of Marine aviation assets, threat and threat counter-tactics, and the C3 system. These exercises will include mission planning, briefing, and execution of an assault support mission in a simulated medium to high threat environment. The total number of aircraft, as specified, may be a dissimilar mix of aviation assets.

b. General. Pilots shall conduct these flights under the standards required in MCO 3501.4, MCCRE, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRE, Volume IX, Special Operations. Pilots should use the CH-53 TAC Manual as a source document for planning. Pilots may conduct these flights in high or low light level conditions, if the participating pilots have the requisite NSQ designation.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Consult the MAWTS-1 Course Catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight.

e. Flight Training. (4 Flights, 10.0 Hours).

TAC-490 2.0 C 3+ ACFT

Goal. Develop integrated tactical flight proficiency in a low-to-medium threat environment; use MCCRES standards as a reference for mission planning.

Requirement
Discuss:
Objective area analysis.
Threat analysis and counter-tactics.
Escorts/supporting arms integration.
C3 integration.
ASE control/employment.

Introduce:
Discussion items.

Incorporate DASC, HDC, MEZ, and EMCON procedures.
Use escort assets emphasizing responsibilities of the air mission commander, assault flight leader, and escort flight leader.

Performance Standards. Remain oriented within 300 meters and arrival in the objective area within ± 1 minute of L-Hour.

Prerequisite. TAC 390.

Ordnance. 2000 rounds .50 caliber ammunition, 30 chaff and 30 flares.

External Syllabus Support. Assault Support Escort aircraft if available.

TAC-491 2.0 C,R,H 3+ ACFT NS

Goal. Develop integrated tactical flight proficiency in an integrated low-to-medium threat environment; use MCCRES standards as a reference for mission planning.

Requirement
Discuss:
Objective area analysis.
Threat analysis and counter-tactics.
Escorts/supporting arms integration.
C3 integration.
ASE control/employment.

Introduce:
Discussion items.
Incorporate DASC, HDC, MEZ, and EMCON procedures.
Use escort assets emphasizing responsibilities of the air mission commander, transport flight leader, and escort flight leader.

Performance Standards. Remain oriented within 300 meters and arrive in the objective area within ± 1 minute of L-Hour.

Prerequisite. TAC 390.

Ordnance. 2000 rounds .50 caliber ammunition, 30 chaff and 30 flares.

External Syllabus Support. Assault Support Escort aircraft if available.

TAC-492 2.0 C,R,H 2+ ACFT NS

Goal. Develop tactical flight proficiency in urban terrain operations at night per the MAWTS-1 MOUT Manual.

Requirement
Discuss:
Effects of ambient lighting on night systems in an urban area.
Urban navigation.
Targeting and fire support coordination in an urban area.

Introduce:
Discussion items listed above.

Performance Standards. Remain oriented within 300 meters and arrive in the objective area within ± 1 minute of L-Hour.

Prerequisite. TAC 391.

Ordnance. 2000 rounds .50 caliber ammunition, 30 chaff and 30 flares.

External Syllabus Support. Assault Support Escort aircraft if available.

TAC-493 4.0 C,R,H 3+ ACFT (N)(NS)

Goal. Utilizing AR and/or TFBDS, execute a long range mission in a low-to-medium threat environment.

Requirement
Discuss:
Route planning.
Refueling considerations.
Escort/fire support coordination.
Utilization of TBFDS, FARP considerations.

Introduce:
Discussion items listed above.

Performance Standards. Remain oriented within 300 meters and arrival in the objective area within ± 1 minute of L-Hour.

Prerequisite. TAC 390.

Ordnance. 2000 rounds .50 caliber ammunition, 30 chaff and 30 flares.

External Syllabus Support. Assault Support Escort aircraft if available. KC-130 Tanker.

140. FRS IUT FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS. The 500 and 600 level flights do not affect CRP points.

1. Day and Night Unaided Instructor Training

a. Purpose. To develop qualified instructor pilots for day and night unaided events using a standardized flight training program.

b. General

(1) Fly IUT flights with a designated FRS Instructor Pilot.

(2) Pilots undergoing instructor training should fly in the right seat.

(3) All IUTs should complete every event of the IUT training syllabus.

c. Training Objectives. All IUT flights emphasize instructional techniques, briefing, and debriefing. The IUT will be capable of demonstrating all training objectives listed for the referenced syllabus flight. Emphasis on all flights is on training objectives, method of instruction, and student problem areas. At the completion of this stage of training, the Pilot will be designated an Instructor Pilot (IP) and is qualified to instruct all day and night unaided Combat Capable events.

d. Crew Requirement. IP/IUT/CC/AO.

e. Flight Training. (7 Flights, 11.0 Hours).

FAM-553 1.5 1 CH-53

Goal. Introduce the IP brief and demonstrate standardized procedures for flight planning, preflight, and all day FAM stage maneuvers.

Requirement
Discuss:
- CRM.
- Preflight and postflight pilot briefings.
- Cockpit procedures.
- Techniques of instruction.
- Local course rules.

Conduct:
- Instructors shall emphasize the ability to teach using all appropriate references and SOPs, evaluate problems, and apply corrective instruction.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. Preflight walk-around, egress and local course rules exam.

Ordnance. N/A.

External Syllabus Support. N/A.

FAM-554 1.5 1 CH-53 N

Goal. Review all familiarization stage maneuvers at night.

Requirement
Discuss:
CRM.
The night unaided environment.

Conduct:
IUT will perform all night familiarization stage maneuvers with emphasis on the IUT's instructional technique. Instructors shall emphasize the ability to teach, evaluate problems, and apply corrective instruction of FAM maneuvers in the unaided night environment.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. None.

Ordnance. N/A.

External Syllabus Support. N/A.

INST-555 2.0 A/S 1 CH-53 (N)

Goal. Review basic instrument maneuvers, IFR planning, filing, and airway procedures.

Requirement
Discuss:
CRM.
IFR planning.
Filing a DD-175.
Airway procedures.
Precision/non-precision approaches.

Review:
Instrument checklist.
Attitude instrument flight.
Standard rate climbing and descending turns.
Recovery from unusual attitudes.
Vertical S-1 pattern.
Oscar pattern.

Conduct:
Fly a minimum of one precision and one non-precision approach.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. None.

Ordnance. N/A.

External Syllabus Support. N/A.

CAL-556 1.5 1 CH-53

Goal. Review CAL instruction techniques.

Requirement
Discuss:
- CRM.
- Comfort level.

Review:
- All CAL stage maneuvers.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. None.

Ordnance. N/A.

External Syllabus Support. N/A.

FORM-557 1.5 2 CH-53

Goal. Review formation instructional techniques and formation stage maneuvers emphasizing closure rates and radius of turn.

Requirement
Discuss:
- Loss of visual contact.
- Parade position.
- Cruise turn principles.
- Section CALs principles.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. None.

Ordnance. N/A.

External Syllabus Support. N/A.

EXT-558 1.5 1 CH-53

Goal. Review external operation instructional techniques.

Requirement
Discuss:
- CRM.
- Single and dual point operations.
- Load computations, preflight and in-flight.
- Emergency procedures.
- Aircraft limitations.

Review:
Single and dual point operations.

Conduct:
Perform a minimum of three successful hookups and releases.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. Preflight walk-around, Egress and Local course rules exam.

Ordnance. N/A.

External Syllabus Support. HST, certified load.

STANX-559 1.5 E 1 CH-53 (N)

Goal. Flight instructor standardization check.

Requirement
Discuss:
CRM.
CH-53 limitations.
Course Rules.
FRS Standardization Manual.
Instruction techniques.

Performance Standards. IAW CH-53 NATOPS and FRS Standardization Manual.

Prerequisites. None.

Ordnance. N/A.

External Syllabus Support. N/A.

141. INSTRUCTOR EVENTS

1. There are six graduate level courses that qualify instructors for specific portions of the T&R syllabus. These courses are as follows:

a. Weapons and Tactics Instructor (WTI).

b. Night Systems Instructor (NSI).

c. Night Systems Familiarization Instructor (NSFI).

d. Aerial Refueling Instructor (ARI).

e. Terrain Flight Instructor (TERFI).

f. Defensive Measures Instructor (DMI).

2. The MAWTS-1 Course Catalog contains the POIs for the above courses and the appropriate training codes. The community considers each particular stage of the T&R syllabus sufficient to maintain proficiency as an instructor.

3. Night Systems Familiarization Instructor Training

a. Purpose. To develop qualified instructor pilots for Night Vision Goggle events using a standardized flight training program.

b. General

(1) Fly IUT flights with a designated NSI or MAWTS-1 Instructor.

(2) Pilots undergoing instructor training should fly in the right seat.

(3) All IUTs shall complete every event of the IUT training syllabus.

c. Training Objectives

(1) All IUT flights emphasize instructional techniques, briefing, and debriefing. The IUT will be capable of demonstrating all training objectives listed for the referenced syllabus flight. Emphasis on all flights is on training objectives, method of instruction, and student problem areas. At the completion of this stage of training, the pilot will be designated a NSFI and is qualified to instruct all Night Vision Goggle Combat Capable HLL events.

(2) The MAWTS-1 Course Catalog contains the prerequisites and course training requirements for this stage of training.

d. Crew Requirement. IP/IUT/CC/AO.

e. Flight Training. (4 Flights, 4.0 Hours).

NVD-560 Refer to MAWTS-1 Course Catalog.
NVD-561 Refer to MAWTS-1 Course Catalog.
NVD-562 Refer to MAWTS-1 Course Catalog.
NVD-563 Refer to MAWTS-1 Course Catalog.

4. Aerial Refueling Instructor (ARI)

a. Purpose. To develop qualified instructor pilots for AR events using a standardized flight training program.

b. General

(1) Complete flights in numerical order.

(2) IUT shall demonstrate instruction and proficiency in the observation, pre-contact, refuel and disconnect positions on both sides of the tanker, from the left seat.

(3) ARIs do not require NSI designation.

(4) An ARI is required to certify additional squadron ARIs.

(5) The completion of AR-520 and 521 satisfies the requirements for designation as an ARI at the discretion of the CO.

c. Recertification

(1) Previously certified CH-53E ARIs returning to the CH-53E requiring refresher or modified refresher training as defined in T&R Program Manual must be recertified by an ARI. Upon recertification, the designation may be made at the discretion of the squadron commanding officer. The following comprises the recertification course:

(a) The IUT must meet all prerequisites listed previously.

(b) The IUT must complete the AR-521E flight evaluated by an ARI.

d. Ground Training. The AR IUT shall present to an ARI an AR class.

e. Flight Training. (2 Flights, 2.0 Hours).

AR-520 1.0 1 CH-53E

Goal. Demonstrate AR proficiency and instructional technique in the day environment.

Requirement
Discuss:
- Instructional techniques.
- CRM.
- Comfort level.
- Decision points.
- EmCon refueling procedures.
- Long range fuel management considerations.

Review:
- AR procedures.
- AR communications.
- Emergency procedures.
- Flight briefing.
- NATOPS AR envelope chart.

Performance Standards. Demonstrate ability to maintain a stable pre-contact position (5-10 feet behind the basket). All misses controlled and smooth and in the upper ½ of the basket. Recognize and correct unsafe closure rates/control inputs. Smooth, controlled movement from contact to refuel position. Demonstrate plugging in a turn. Demonstrate a controlled miss. IUT should plug on both sides of tanker.

Prerequisite. AR-362 and TAC-493.

Ordnance. N/A.

External Syllabus Support. KC-130 (or USAF C-130).

AR-521 1.0 E CH-53E N NS

Goal. Demonstrate NVG AR proficiency and instructional technique.

Requirement
Discuss:
Instructional techniques.
CRM.
Comfort level.
Decision points.
NVG EmCon refueling procedures and signals.
Depth perception.
NVG considerations.
Visual illusions/Vertigo.
Lighting configurations (Marine Corps/Joint).

Review:
AR procedures.
AR communications.
Emergency procedures.
Flight briefing.
NATOPS AR envelope chart.

Performance Standards. Demonstrate ability to maintain a stable pre-contact position (5-10 feet behind the basket). All misses controlled and smooth and in the upper ½ of the basket. Recognize and correct unsafe closure rates/control inputs. Smooth, controlled movement from contact to refuel position. Demonstrate a controlled miss. IUT should plug on both sides of tanker.

Prerequisite. AR-362, TAC-493 and AR-520* (* Unless previously certified CH-53E ARI).

Ordnance. N/A.

External Syllabus Support. KC-130 (or USAF C-130).

5. Terrain Flight Instructor (TERFI)

a. Purpose. To develop qualified instructor pilots for day terrain flight events using a standardized flight-training syllabus.

b. General

(1) All IUT flights shall be flown with a designated TERFI.

(2) All IUTs shall be TERF qualified and current per T&R Program Manual.

(3) All IUTs shall be section leader designated.

(4) The squadron will ensure that the IUT is prepared for certification. The certification stage of the flight syllabus must be complete within six months following the first IUT flight. If six months have elapsed since completion of any IUT flight, that flight must be reflown prior to completing the final certification flight.

c. Recertification

(1) Previously certified CH-53 TERFI's returning to the CH-53 requiring refresher or Modified Refresher training as defined in T&R Program Manual must be recertified by a TERFI. Upon recertification, the designation may be made at the discretion of the squadron commanding officer. The following comprises the re-certification course:

(a) The IUT must meet all prerequisites listed previously.

(b) The IUT must successfully complete the TERFI exam administered by a TERFI.

(c) The IUT must complete the TERF-572E flight evaluated by a TERFI.

(2) Pilots certified as a TERFI in an aircraft other than the CH-53 who transition to the CH-53 as defined in T&R Program Manual must complete the entire CH-53 TERFI Certification Course previously listed.

(3) Pilots certified as a TERFI converting within the CH-53 series who do not require refresher training as defined in T&R Program Manual maintain their TERFI certification and may be designated a TERFI at the discretion of the squadron commanding officer.

d. Crew Requirement. IP/IUT/CC/AO.

e. IUT Ground Training

(1) The IUT will review and be capable of presenting the following classes from the MAWTS-1 Academic Support Package (ASP):

Terrain Flight Introduction (U)
Tactical CRM (U)
IR SAM Threat to Assault Support (U)
RADAR SAM Threat to Assault Support (U)
AAA Threat to Assault Support (U)

(2) The academic syllabus shall be completed within 60 days prior to beginning the certification stage of the flight syllabus.

(3) The IUT will successfully complete a TERFI exam, administered by a TERFI, prior to beginning the certification stage of the flight syllabus. The minimum-passing grade for the exam is 80 percent.

(4) The IUT will present to a TERFI one of the classes listed above, as determined by the TERFI, before completing the certification stage of the flight syllabus.

f. Flight Training. (3 Flights, 4.0 Hours).

TERF-570	1.5	2 CH-53

Goal. Demonstrate the ability to conduct flight navigation in the contour and low level profiles and tactical formation in the TERF environment with emphasis on instructional techniques.

Requirement
Discuss:
- CRM in a TERF environment.
- Comfort Level.
- Instructional Techniques.
- Low altitude emergencies.
- Weapons and ALE/APR employment.
- Visual illusions associated with TERF flight.

Review:
- Operational Power checks.
- TERF turns, rolls, contour/low level quick stops, bunts.
- Contour profiles.
- Low altitude emergencies.
- TERF navigation techniques and responsibilities.

Performance Standards. Using a 1:50,000 map, the IUT will navigate in the contour profile remaining oriented within 100 meters. The route shall be a minimum of 50 NM demonstrating both low level and contour profiles. The IUT must arrive at the final checkpoint within 1 minute of the planned time. The minimum number of checkpoints will be determined by the TERFI. The IUT will instruct tactical formation in the low level and contour profiles.

Prerequisites. TERF-232.

Ordnance. .50 cal and chaff and flares as able.

External Syllabus Support. N/A.

TERF-571 1.0 1 CH-53

Goal. Demonstrate the ability to conduct all terrain flight maneuvers while flying with an external load, emphasizing instructional techniques.

Requirement
Discuss:
- Instructional techniques.
- Crew coordination in contour flight with externals.
- Voice and visual signals.
- Flight envelopes of various loads.
- Cargo jettison procedures.
- Low altitude emergencies.
- Single/Dual engine operations (with & without the load).
- Illusions of terrain flight.
- HST requirements.

Review:
- All TERF maneuvers with external loads emphasizing requirements for early initiation of maneuvers and flight profile corrections to prevent pilot induced/assisted oscillations.
- Operational power checks.

Performance Standards. The IUT will conduct a minimum of two hookups and deliveries placing the load within five meters of the intended point.

Prerequisite. EXT-341.

Ordnance. N/A.

External Syllabus Support. HST.

TERF-572 1.5 E 1 CH-53

Goal. Evaluate the IUT's ability to perform and instruct all phases of terrain flight and terrain flight navigation.

Requirement
Discuss:
- Crew coordination.
- Instructional techniques.
- Comfort level.
- Illusions of terrain flight.
- Low altitude emergencies.
- Single/dual engine operations.
- TERF/navigation techniques and responsibilities.
- Weapons and ASE employment.

Review:
- Operational Power Checks.
- All TERF maneuvers.

Performance Standards. Accomplish operational power checks. Accomplish all TERF maneuvers without experiencing negative g's. Maintain altitude within 50 feet on quick stop. Navigate using a 1:50,000 map and remain within 200 meters of prescribed routing and arrive at the final checkpoint within 1 minute of the planned time. Instruct all TERF maneuvers. The route shall be a minimum of 50 NM in the contour mode. The minimum number of checkpoints will be determined by the TERFI.

Prerequisites. TERF-232, EXT-341, TERF-570* and TERF-571*
* unless previously certified CH-53 TERFI.

150. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS. This phase contains required evaluation and flight leadership events for tracking purposes.

1. Evaluation (EVAL) Flights

a. Purpose. To determine qualification for designation in specific flight skills, systems knowledge and procedures.

b. General. Squadrons should use this phase of training for check flights.

c. Crew Requirements. P/P/CC/AO (as required).

d. Ground/Academic Training. Reference OPNAVINST 3710.7R, CH-53 NATOPS and Instrument Flight Manuals.

e. Flight Training. (2 Flights, 3.0 Hours).

EVAL-600 1.5 E A/S 1 CH-53 (N) (NS)

Goal. Conduct Annual NATOPS evaluation.

Requirement. As directed in the CH-53 NATOPS Flight Manual, Chapter 18, and OPNAVINST 3710.7R, Chapter 2.

Performance Standards. The proficiency expected by the evaluator in this flight shall be commensurate with the experience level of the pilot under evaluation.

Prerequisite. The open and closed book NATOPS examinations shall be completed prior to the commencement of the check flight.

Ordnance. N/A.

External Syllabus Support. WST/APT as required.

EVAL-601 1.5 E S/A 1 CH-53 (N) (NS)

Goal. Conduct annual instrument evaluation.

Requirement. As directed in the CH-53 NATOPS Flight Manual, Chapter 13 and OPNAVINST 3710.7R, Chapter 13.

Performance Standards. Demonstrate proficiency in all phases of instrument flight and flight planning IAW the NATOPS Instrument Flight Manual.

Prerequisite. Completion of Instrument Ground School and all instrument requirements per OPNAVINST 3710.7R prior to the commencement of the check flight.

Ordnance. N/A.

External Syllabus Support. As required.

EVAL-602 2.0 E 1 CH-53

Goal. Conduct a functional check pilot evaluation.

Requirement. Squadrons shall evaluate pilots for designation at the discretion of the commanding officer per the criteria in the CH-53 NATOPS Flight Manual, OPNAVINST 3710.7, 4790 Naval Aviation Maintenance Program and local SOPs. Squadrons shall base this evaluation after completion of a locally prepared syllabus.

Performance Standards. Demonstrated proficiency in all aspects of conducting functional check flights (FCF) on the CH-53.

Prerequisite. As determined by squadron CO, QAO and STAN Board.

Ordnance. N/A.

External Syllabus Support. As required.

2. Flight Leadership (FL)

a. Purpose. To demonstrate requisite knowledge, leadership, airmanship and judgment in all phases of flight commensurate with the experience level of the pilot under evaluation.

b. General. Squadrons shall evaluate pilots for designations at the discretion of the commanding officer per the criteria in the CH53 NATOPS Flight Manual, OPNAV 3710.7R and local SOPs. Upon the successful completion of the Check Flight the new Section/Division/Flight Leader or Air Mission Commander will be designated in writing by the commanding officer. Requirements may be waived at the discretion of the commanding officer and details of the waiver will be annotated in the pilots APR.

c. Crew Requirements. P/P/CC/AO (as required).

d. Ground/Academic Training. Reference CH-53 NATOPS, TAC Manual, MAWTS-1 ASP, and applicable SOPs.

e. Flight Training. (7 Flights, 10.5 Hours).

FL-603 1.5 E, H, C 1 CH-53

Goal. Conduct day HAC review.

Requirement. As directed in the CH-53 NATOPS Flight Manual Chapter 13 and OPNAVINST 3710.7R, Chapter 13. To include but not limited to all practicable operations and procedures contained in the T&R syllabus.

Performance Standards. Demonstrate proficiency and leadership in all phases of CH-53 operations as appropriate. Emphasis will be placed on NATOPS, CH-53 TAC Manual, MAG and squadron SOPs, and the Instrument Flight Manual.

Prerequisite. The Open and Closed book NATOPS examinations shall be completed prior to the commencement of the check flight.

Ordnance. As required.

External Syllabus Support. As required.

FL-604 1.5 E, H, C 1 CH-53 N NS

Goal. Conduct night/NVD HAC review.

Requirement. Continuation of review flight to include but not limited to all practicable operations and procedures contained in the T&R syllabus as they pertain to night operations and procedures.

Performance Standards. Demonstrate proficiency and leadership in all phases of CH-53 operations as appropriate. Emphasis will be placed on NATOPS, CH-53 TAC Manual, MAWTS-1 NVD Manual, MAG and squadron SOPs, and the Instrument Flight Manual.

Prerequisite. FL-603.

Ordnance. As required.

External Syllabus Support. As required.

FL-605 1.5 E, H, C 1 CH-53 N NS

Goal. Conduct day into night HAC check.

Requirement. As directed in the CH-53 NATOPS Flight Manual, Chapter 13 and OPNAVINST 3710.7R, Chapter 13. To include but not limited to all practicable operations and procedures contained in the T&R syllabus.

Performance Standards. Squadrons shall evaluate pilots for HAC designation at the discretion of the commanding officer per the criteria in the CH-53 NATOPS Flight Manual, OPNAVINST 3710.7, and local SOPs. This flight will cover all practicable operations and procedures contained in the T&R syllabus.

Prerequisite. FL-604.

Ordnance. As required.

External Syllabus Support. As required.

FL-606 1.5 2 CH-53 (N) (NS)

Goal. Conduct Section Leader check.

Requirement. Demonstrate the leadership necessary for effective mission accomplishment.

Performance Standards. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Vol III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Vol IX, Special Operations. Moreover, pilots may use CH-53 TAC Manual as a source document for planning.

Prerequisite. Plan, brief, fly TAC-290 or 291.

Ordnance. Same as appropriate TAC flights.

External Syllabus Support. Same as appropriate TAC flights.

FL-607 1.5 3 CH-53 (N) (NS)

Goal. Conduct Division Leader check.

Requirement. Demonstrate the leadership necessary for effective mission accomplishment.

Performance Standards. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Vol III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Vol IX, Special Operations. Moreover, pilots may use CH-53 TAC Manual as a source document for planning.

Prerequisite. Plan, brief, fly TAC-390 or 391.

Ordnance. Same as appropriate TAC flights.

External Syllabus Support. Same as appropriate TAC flights.

FL-608 1.5 2 Div+ (N) (NS)

Goal. Conduct Flight Leader check.

Requirement. Brief and lead a multi-division mission emphasizing flight coordination, flight discipline, inadvertent IMC, rendezvous procedures and inflight emergency coordination.

Performance Standards. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Vol III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Vol IX, Special Operations. Moreover, pilots may use CH53 TAC Manual as a source document for planning.

Prerequisite. TAC-390 and 391.

Ordnance. As required.

External Syllabus Support. As required.

FL-609 1.5 2+ Div (N) (NS)

Goal. Conduct Air Mission Commander check.

Requirement. The Mission Commander designation is a function of flight leadership, maturity and experience. The Mission Commander should be evaluated on his ability to integrate the six functions of Marine aviation. The Mission Commander should lead the mission from a C&C aircraft, if available.

Performance Standards. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Vol III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Vol IX, Special Operations. Moreover, pilots may use CH-53 TAC Manual as a source document for planning.

Prerequisite. TAC 490 and 491.

Ordnance. As required.

External Syllabus Support. As required.

160. ORDNANCE REQUIREMENTS. Annual ordnance requirements are developed on a "per crew" basis per OPNAVNOTE 8010.

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	ANNUAL*
Chaff	0	0	90	90	90	0	110
Flares	0	0	90	210	210	0	230
.50 CAL	See Crew Chief syllabus for numbers.						

* Annual Ordnance requirements maintain aircrew proficiency.

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	H	REMARKS
CORE SKILL INTRODUCTION								
SFAM	100	1.0	*	0.2	X	X	X	S
	101	1.0	*	0.2				S
	102	1.0	*	0.2				S
	103	1.0	*	0.2				S
	104	1.0	*	0.2				S CRM
	105	1.5	*	0.2	X	X	X	S CRM
	106	1.0	*	0.2	X	X	X	S CRM
	107	1.0	*	0.2				S NS
FAM	110	1.5	*	1.0	X		X	A
	111	1.5	*	1.0	X			A
	112	1.5	*	1.0	X			A
	113	1.5	*	1.0				A
	114	1.5	*	1.0	X	X	X	A
	115	1.5	*	1.0				A
	116	1.5	*	1.0	X	X	X	A
	117	1.5	*	1.0				A
	118	1.5	*	1.0	X	X	X	A
	119	1.5	*	1.0				A
	120	1.5	*	1.0	X	X	X	A N
	121	1.5	*	1.0	X			A NS
	122	1.5	*	1.0	X	X	X	A NS
SINST	130	1.0	*	0.2				S CRM
	131	1.0	*	0.2	X	X	X	S CRM
	132	1.0	*	0.2	X	X	X	S CRM
	133	1.0	*	0.2				S CRM
	134	1.0	*	0.2				S CRM
INST	135	1.5	*	0.5				A/S (N)(NS)
	136	1.5	*	0.5	X	X	X	A/S (N)(NS)
	137	1.5	*	1.0	X	X	X	A/S (N)(NS)
	138	1.5	*	1.0	X			A/S (N)(NS)
SNAV	140	1.0	*	0.2				S
NAV	141	2.0	*	1.0				A
	142	2.0	*	1.0				A NS
SFORM	150	1.0	*	0.2	X	X	X	S
FORM	151	1.5	*	1.0	X	X	X	A 2 A/C
	152	1.5	*	1.0				A 2 A/C NS
SCAL	160	1.0	*	0.2				S NS
CAL	161	1.5	*	1.0	X	X	X	A
	162	1.5	*	1.0				A 2 A/C
	163	2.0	*	1.0				A NS
EXT	170	1.0	*	1.0	X		X	A
	171	1.0	*	1.0	X		X	A NS
	172	1.5	*	1.0	X	X	X	A
	173	1.5	*	1.0	X	X	X	A NS

Figure 1-2.--Pilot Refly Interval, Combat Readiness Percentage.

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	H	REMARKS
TERF	180	1.5	*	1.0	X	X	X	A
	181	1.5	*	1.0				A
REV	190	1.5	*	1.3	X	X	X	A
CSIX	191	2.0	*	1.5	X	X	X	A E
CORE SKILL BASIC								
SFAM/FLIR	200	1.5	12	0.0/0.2	X	X	X	NS
FAM/INST	201	1.5	6	1.0/0.2	X			A/S (N)
FORM	210	1.5	12	0.5	X			A 2 A/C
	211	2.0	6	0.8	X			A 2 A/C NS
CAL	220	1.5	12	1.0/0.5	X			A
	221	1.5	12	1.0/0.5	X	X	X	A 2 A/C
	222	1.5	6	1.0	X			A NS
	223	2.0	6	1.0	X	X	X	A 2 A/C NS
	224	1.5	*	0.0	X	X	X	A NS
TERF	230	1.5	12	1.0/0.5	X			A
	231	1.5	12	1.0	X	X	X	A 2 A/C
	232	2.0	6	1.0	X			A NS
	233	2.0	6	1.0	X	X	X	A 2 A/C NS
EXT	240	1.5	12	1.0	X		X	A
	241	1.5	12	0.0/1.0	X	X	X	A
	242	1.5	6	1.0	X			A NS
	243	1.5	6	0.0/1.0	X	X	X	A NS
SDM	250	1.5	12	0.0/0.1	X	X	X	S (NS)
SAR	260	1.0	12	0.0/0.1	X	X	X	S (NS)
SCQ	270	1.0	12	0.2/0.1	X		X	S N NS
AG	280	2.0	*	0.5	X	X	X	A
TAC	290	2.0	12	1.0	X			A 2 A/C
	291	2.0	12	1.0	X			A 2 A/C NS
CORE SKILL ADVANCED								
CAL	320	1.5	6	1.5	X			A NS
	321	2.0	6	1.5	X	X	X	A 2 A/C NS
	322	1.5	*	0.0	X	X	X	A NS
TERF	330	1.5	6	1.5	X			A NS
	331	2.0	6	1.5	X	X	X	A 2 A/C NS

Figure 1-2.--Pilot Refly Interval, Combat Readiness Percentage (Cont).

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	H	REMARKS
EXT	340	1.5	12	1.5/1.0	X		X	A
	341	1.5	12	2.0/1.0	X	X	X	A
	342	1.5	6	2.0/1.5	X	X	X	A NS
	343	2.0	6	2.0/1.5	X	X	X	A NS
DM	350	2.0	12	1.5/1.0	X	X	X	A 2 A/C (N)(NS)
AR	360	1.5	6	0.0/1.0	X		X	A
	361	1.5	6	0.0/1.0	X	X	X	A
	362	1.5	6	0.0/1.5	X	X	X	A NS
AG	380	1.5	*	1.0	X	X	X	A 2 A/C NS
TAC	390	2.0	12	2.0/1.5	X	X	X	A 2+A/C
	391	2.0	12	2.0	X	X	X	A 2+A/C NS
CORE SKILL PLUS								
HIE	400	1.5	12	0.1	X	X	X	A (N)(NS)
	401	1.5	12	0.1	X	X	X	A
	402	1.5	12	0.1	X	X	X	A (N)(NS)
DM	450	1.0	12	0.5	X	X	X	A 2V1 R/W
	451	1.0	12	0.5	X	X	X	A 2V1 F/W
NBC	460	1.0	12	0.1	X	X	X	A
FCLP	471	1.0	12	0.3	X	X	X	A
	472	1.0	12	0.2	X		X	A N
	473	1.0	12	0.3	X	X	X	A NS
CQ	474	1.5	12	0.3	X	X	X	A
	475	1.5	12	0.2	X		X	A N
	476	1.5	12	0.3	X	X	X	A NS
TAC	490	2.0	12	0.5	X			A 3+A/C
	491	2.0	12	0.5	X	X	X	A 3+A/C NS
	492	2.0	12	0.5	X	X	X	A 2+A/C NS
	493	4.0	12	0.5	X	X	X	A 3+A/C(N)(NS)
INSTRUCTOR AND SPECIAL FLIGHT PERFORMANCE REQUIREMENTS DAY AND NIGHT UNAIDED INSTRUCTOR UNDER TRAINING								
FAM	553	1.5	*	N/A				A
	554	1.5	*	N/A				A N
INST	555	2.0	*	N/A				A/S (N)
CAL	556	1.5	*	N/A				A
FORM	557	1.5	*	N/A				A 2 A/C

Figure 1-2.--Pilot Refly Interval, Combat Readiness Percentage (Cont).

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	H	REMARKS
EXT	558	1.5	*	N/A				A
STANX	559	1.5	*	N/A				A (N)
AERIAL REFUELING INSTRUCTOR UNDER TRAINING								
AR	520	1.0	*	N/A				A
	521	1.0	*	N/A				A NS
TERF	570	1.5	*	N/A				A 2 A/C
	571	1.0	*	N/A				A
	572	1.5	*	N/A				A
EVALUATIONS AND FLIGHT LEADERSHIP PERFORMANCE REQUIREMENTS.								
EVAL	600	1.5	12	N/A				A/S E (N)(NS)
	601	1.5	12	N/A				S/A E (N)(NS)
	602	2.0	*	N/A				A E
FL	603	1.5	*	N/A	X		X	A E
	604	1.5	*	N/A	X		X	A E N NS
	605	1.5	*	N/A	X		X	A E N NS
	606	1.5	*	N/A	X			A E 2 A/C(N)(NS)
	607	1.5	*	N/A	X			A E 3 A/C DIV (N)(NS)
	608	1.5	*	N/A	X			A E 2 DIV+(N)(NS)
	609	1.5	*	N/A	X			A E 2 DIV+(N)(NS)

Figure 1-2.--Pilot Refly Interval, Combat Readiness Percentage (Cont).

CH-53 PILOT FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
SINST	200	
FAM	201	200
FORM	210	
	211	210
CAL	220	
	221	210,220
	222	220
	223	210,211,220,221,222
	224	220,222
TERF	230	
	231	210,230
	232	220,222,230
	233	210,211,220,221,222,223,230,231,232
EXT	240	220
	241	220,240
	242	220,222,240,241
	243	220,222,240,241,242
SDM	250	
SAR	260	
SCQ	270	
AG	280	
TAC	290	210,220,221,230,231
	291	210,211,220,221,222,223,230,231,232,233,290
CAL	320	220,222
	321	210,211,220,221,222,223,320
	322	220,222
TERF	330	220,222,230,232,320
	331	210,211,220,221,222,223,230,231,232,233,320,321,330
EXT	340	220,240
	341	220,230,240,340
	342	220,222,240,241,242,320,340
	343	220,222,230,232,240,241,242,320,330,340,341,342
DM	350	210,230,231,250
AR	360	260
	361	260,360
	362	260,360,361

Figure 1-3.--Pilot Flight Update Chaining.

STAGE	FLIGHT	FLIGHTS UPDATED
AG	380	280
TAC	390	210,220,221,230,231,290,
	391	210,211,220,221,222,223,230,231,232,233,290,291,320, 321,330,331,390
HIE	400	
	401	
	402	
DM	450	210,230,231,250
	451	210,230,231,250
NBC	460	220
FCLP	471	270
	472	270,471
	473	270,471,472
CQ	474	270,471
	475	270,471,472,474
	476	270,471,472,473,474,475
TAC	490	210,220,221,230,231,290,390
	491	210,211,220,221,222,223,230,231,232,233,290,291,320, 321,330,331,390,490
	492	210,211,220,221,222,223,230,231,232,233,290,291,(391 LLL)
	493	210,220,221,230,231,290,390,490 (Include appropriate AR and TAC event codes for ambient conditions on NAVFLIR)
EVAL	600	Add appropriate training code to NAVFLIR.
	601	Add appropriate training code to NAVFLIR.
FL	602	Add appropriate training code to NAVFLIR.
	603	Add appropriate training code to NAVFLIR.
	604	Add appropriate training code to NAVFLIR.
	605	Add appropriate training code to NAVFLIR.
	606	Add appropriate training code to NAVFLIR.
	607	Add appropriate training code to NAVFLIR.
	608	Add appropriate training code to NAVFLIR.
	609	Add appropriate training code to NAVFLIR.

Figure 1-3.--Pilot Flight Update Chaining (Cont).

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ALL FLIGHTS	US	BA	AV	AA
- PREPARATION				
- WEIGHT & POWER				
- SYSTEMS KNOWLEDGE				
- PREFLIGHT/POSTFLIGHT				
- COCKPIT PROCEDURES				
- HEADWORK				
- RADIO PROCEDURES				
- COURSE RULES				
- BASIC AIRWORK				
- CRM				
FAMILIARIZATION				
- TAXI				
- VERTICAL TAKEOFF				
- VERTICAL LANDING				
- LOW WORK				
- TRANS TO FORWARD FLIGHT				
- NORMAL APPROACH				
- PRECISION APPROACH				
- NO HOVER LANDING				
- RUNNING TAKEOFF/ LANDING				
- QUICK STOP				
- HIGH ANGLE OF BANK				
- PRACTICE AUTOROTATION				
- ENGINE OUT				
- AFCS/ SERVOS OFF/ AMPS OFF				
NIGHT SYSTEMS				
- NS ADAPTATION				
- LIGHT DISCIPLINE				
- NIGHT FORMATION				
INSTRUMENTS				
- INSTRUMENT CHECKLIST				
- INSTRUMENT TAKEOFF				
- BASIC INSTRUMENT WORK				
- UNUSUAL ATTITUDE				
- BASIC INSTRUMENT				
- PARTIAL PANEL				
- ATC PROCEDURES				
- DD-175/ DD-175-1/ ICAO				
- ADF				
- VOR				
- TACAN				
- GCA				
- ILS				
- MISSED APPROACH				
- ENROUTE NAVIGATION				

FORMATION	US	BA	AV	AA
- PARADE				
- COMBAT CRUISE				
- COMBAT SPREAD				
- TURN PRINCIPLES				
- CROSSOVERS				
- OVERRUN				
- TURN PATTERN				
- BREAK-UP & RENDEZVOUS				
- LEAD CHANGE				
- SECTION				
CONFINED AREA LANDINGS				
- LANDING ZONE BRIEF				
- APPROACH				
- OBSTACLE APPROACH				
- OBSTACLE TAKEOFF				
- TACTICAL APPROACH				
EXTERNALS				
- HOOK/PENDANT PREFLIGHT				
- OP POWER CHECKS				
- PRECISION HOVER				
- PICK-UP				
- PATTERN				
- DELIVERY				
NAVIGATION - TERF				
- MAP PREPARATION				
- MAP INTERPRETATION				
- TIME DISTANCE CHECKS				
- FUEL PLANNING				
- IN-FLIGHT ORIENTATION				
- CHECK POINT				
- TERF/ AIRCRAFT AWARENESS				
- LOW LEVEL/ CONTOUR FLIGHT				
- MASKING/UNMASKING				
- BUNT				
- ROLL				
- TERF TURN				
- TERF QUICK STOP				
HEADWORK				
- DECISION MAKING				
- ASSERTIVENESS				
- MISSION ANALYSIS				
- COMMUNICATION				
- LEADERSHIP				
- ADAPTABILITY/ FLEXIBILITY				
- SITUATIONAL AWARENESS				
- CREW COMFORT				

Figure 1-4.-- Pilot Combat Capable Training Aircrew Training Form.

REMARKS:

STRENGTHS:

WEAKNESS:

DATE OF FLIGHT	_____	FLIGHT TIME	_____
TRAINING CODE	_____	LANDINGS	_____
INSTRUCTOR	_____	STUDENT	_____

Figure 1-4.--Pilot Combat Capable Training Aircrew Training Form (Cont).

	US	BA	AV	AA
ALL FLIGHTS				
- PREPARATION				
- WEIGHT & POWER				
- SYSTEMS KNOWLEDGE				
- PREFLIGHT/POSTFLIGHT				
- COCKPIT PROCEDURES				
- HEADWORK				
- SITUATIONAL AWARENESS				
- RADIO PROCEDURES				
- COURSE RULES				
- BASIC AIRWORK				
- CRM				
- EMERGENCY PROCEDURES				
- NS ADAPTATION				
- CREW COMFORT				
FAMILIARIZATION				
- LOW WORK				
- NORMAL APPROACH				
- PRECISION APPROACH				
- NO HOVER LANDING				
- RUNNING LANDING/TAKEOFF				
- PRACTICE AUTOROTATION				
- SIMULATED ENGINE FAILURE				
- AFCS/SERVOS OFF				
INSTRUMENTS				
- INSTRUMENT CHECKLIST				
- INSTRUMENT TAKEOFF				
- BASIC INST AIRWORK				
- UNUSUAL ATT RECOVERY				
- PARTIAL PANEL				
- ATC PROCEDURES				
- ADF				
- VOR				
- TACAN				
- GCA				
- ILS				
- MISSED APPROACH				
- ENROUTE NAVIGATION				
FORMATION				
- PARADE				
- COMBAT CRUISE				
- COMBAT SPREAD				
- NS FORMATION				
- CROSSOVERS				
- LEAD CHANGE				
- TAC TURNS				
- IN-PLACE TURN				
- CROSS TURN				
- BREAK TURN				
- PINCH/DIG				
- SECTION LANDINGS				
- DIVISION				
CONFINED AREA LANDINGS				
- LANDING ZONE BRIEF				
- ARRROACH				
- HOVER				
- LANDING				
- OBSTACLE APPROACH				
- OBSTACLE TAKEOFF				

	US	BA	AV	AA
- OBSTACLE TAKEOFF				
- TACTICAL APPROACH				
TERRAIN FLIGHT				
- MAP PREPARATION				
- MAP INTERPRETATION				
- TIME DISTANCE CHECKS				
- FUEL PLANNING				
- PERFORMANCE CHECK				
- IN-FLIGHT ORIENTA TION				
- MASKING/UNMASKING				
- BUNT				
- ROLL				
- TERF TURN				
- TERF QUICK STOP				
EXTERNALS				
- HOOK/PENDANT PREFLIGHT				
- OP POWER CHECKS				
- PRECISION HOVER				
- PICK-UP				
- PATTERN				
- DELIVERY				
NBC				
- NBC ADAPTATION				
DEFENSIVE MANEUVERS				
- THREAT CONSIDERATION				
- REC PLAN				
- EXPENDABLE DEPLOYMENT				
- ALE PROCEDURES				
- APR PROCEDURES				
- LOOKOUT DOCTRINE				
- ADVESARY RECOGNITION				
- MUTUAL SUPPORT				
- FLIGHT MANAGEMENT				
CARRIER QUALIFICATION				
- SHIPBOARD PROCEDURES				
- PATTERN				
- APPROACH				
- MARSHALL PROCEDURES				
- LANDING				
- TRANSITION TO FORWARD				
TACTICS				
- MISSION PLANNING				
- MISSION BRIEFING				
- MISSION EXECUTION				
- ACTIONS IN OBJ AREA				
- LOGISTICS				
AERIAL REFUELING				
- JOIN-UP				
- RENDEZVOUS PROCEDURES				
- PRE-CONTACT				
- CONTACT				
- REFUELING POSITION				
- DISCONNECT				
HELO INSERT & EXTRACT				
- AERIAL DELIVERY				
- FAST ROPE				
- RAPPELLING				
- SPIE RIG				
- HELOCASTING				

Figure 1-5.-- Pilot Tactical HMH Squadron.

REMARKS:

STRENGTHS:

WEAKNESS:

DATE OF FLIGHT	_____	FLIGHT TIME	_____
TRAINING CODE	_____	LANDINGS	_____
INSTRUCTOR	_____	STUDENT	_____

Figure 1-5.-- Pilot Tactical HMH Squadron (Cont).